The Builder.

VOL. XIV.—No. 719.

BIT by bit, and this not slowly, the Palace of Parliament, the greatest architectural work of modern times, approaches completion. The pinnacled turrets of the Victoria Tower are being proceeded with rapidly, and by the end of the year the whole outline of this enormous building will be seen. Long may it stand a symbol of the stability, the dignity, the power, and the greatness of the kingdom! The pinnacles measure 70 feet in height from the top of the parapet on the tower, no trifling work of themselves. Viewed from the ground, the man now at work at the crane is little bigger than your hand. Who shall tell — who asks, indeed — how many sleepless nights this structure has cost its architect? Putting aside the question of art, its successful completion in a constructional point of view must be regarded as a great achievement. Had the foundation proved insufficient, had it settled unequally and fallen out of upright, had an arch yielded, or the ponderous groined vaulting slipped, loud of course would have been the outcry,—ruinous, probably, the blame. But disaster being avoided, difficulties overcome, the structure successfully raised, how few stop to appreciate the comprehensive grasp of all circumstances, the prevision, and the varied skill demanded for the result!

The exterior of the Peers' Entrance and offices was represented on a previous page (219, *ante*). The Peers' Staircase is now finished, and we give a view of it in our present number.* It will come into use on the re-assembling of Parliament. Metal gaseliers, not yet determined on, will hang from the crown of each vault. The flooring and the risers of the steps are of tiles.

If we pass up this staircase and gain the Prince's Chamber, the apartment between the House of Lords and the Royal Gallery, we shall find the masons at work there, fixing Mr. Gibson's marble group of Her Majesty between Justice and Clemency against the wall which is immediately at the back of the throne. The Queen is represented as seated on a high pedestal: Justice stands at the foot on her right hand, Clemency on her left. These figures are much too large, and lead one to view favourably the course pursued by the Egyptian sculptors in making the hero or ruler much larger than the surrounding figures. Moreover, the three figures seem scarcely to accord. Putting these objections on one side, the whole group is much too large for the position, and is altogether out of place. It is much to be regretted, and, indeed, will scarcely be believed out of England, that the architect has no voice in determining either the character or position of the sculptural and pictorial decoration of the building: strange to say, he is not even a member of the commission to whom it is entrusted. In the present case the chamber, intended for sculptures and carvings of an entirely different character, is dwarfed, and its congruity is destroyed.

In making these observations, we must not omit to acknowledge the genius and skill shown by the sculptor: the figure of Justice, in particular, is a noble work. It would be better if the two standing figures were removed, and made to take elsewhere an independent position.

In the Peers' corridor, at the other end of the house, one of the panels formed to receive frescoes has been filled by Mr. Cope, R.A. The subject is the Landing of the Pilgrim Fathers it is a picture of great excellence and beauty.

In St. Stephen's Hall, the want of congruity between the building and the sculpture introduced, just now alluded to, is strikingly apparent. The size of the statues destroys the hall, and there is no agreement in sentiment. The last statue put up here, is that of Fox, by Mr. Baily, R.A. a thick, short-legged figure, in modern costume, said to be a good likeness, but agreeing very ill with the locality. It may be anticipated, however, that this incongruity will make itself more and more felt, and that at some future time these statues, many of which are admirable works, will be removed to a more appropriate gallery, and their place will be supplied with sculpture more suitable in size and character.

Passing out through Westminster-hall, where elaborate brass candelabra are being put up, in readiness for the meeting of Parliament, let us go over to the Clock Tower, and look at the great bell now hanging at the foot of it. It weighs 15 tons and 8½ cwt. is 7 feet 10 inches high, 9 feet 5½ inches in diameter, and was cast by Messrs. John Warner and Sons, of Jewin-street-crescent, in the City, under the direction of Mr. E. Beckett Denison, Q.C. It has a considerable thickness of metal in the sound bow, the rim round the mouth of the bell: it is there 9¾ inches thick. It has come to be called "Big Ben of Westminster," in honour of Sir Benjamin Hall, the Chief Commissioner of Public Works, and has already make some noise in the world, though it has not yet a tongue in its mouth. This appendage, however, arrived while we were looking at the bell on Monday, and is said to weigh 13 cwt. and 26 lbs. The shape of the bell is not a pleasing one, and we must confess that the staring inscriptions to the honour and glory of the casters and others, on the outside of the bell, gave us less pleasure in the reading than some of the quaint lines we have at times puzzled out in ancient belfries, midst the remnants of Jack Daws' nests and the dust of gone-by centuries, nervous lest the clock should strike, but determined nevertheless to bag the inscription. This, however, is a minor consideration (though thousands yet unborn will go up to look at "Big Ben" in his nest); the great point is the tone, and we sincerely hope, and, indeed, have no reason to fear, that this will prove to be all that can be desired. Mr. Denison, in the second edition of his "Lectures on Church Building," a book wherein much cleverness is obscured by more egotism, says:—

"It is a great mistake to suppose that musicians, as such, are the fittest persons to be appointed to judge of the goodness of bells. Unless they are conversant with bells, and know by experience what kind of sound ought to come out of a given weight of bell metal, their opinion is not worth as much as that of many a bell-ringing cobbler, who does not know one musical note from another, but who knows very well the difference between a good bell and a bad one. Musicians, of course, are the persons to judge whether the bells of a peal are in tune with each other. But that is the smallest part of the business; for a set of cast-iron pots might be in as perfect tune among themselves as the finest peal of bells in the world; and moreover, the tune or note of a bell can be altered by cutting, whereas the tone or quality of the sound is incurable if it is bad. Moreover, musicians are very apt to condemn bells which are not of some musical note exactly: which is a piece of pure nonsense: for the names or pitches of the notes are only conventional, and I am told by those who understand such things much better than I do, that what is called in musical slang 'concert pitch' has been raised so much within living memory, that bells and other unchangeable instruments which used to be of the note C would now be called B. So long as the bells are in tune among themselves, and the tone of each bell is good in itself, it does not signify a farthing what their notes may be called; for it is nothing but a question of names after all."

The art of bell-founding appears to have sunk very low of late: the fact of the two principal bell-founders in England having failed in three successive attempts (viz. Messrs. Mears twice, and Messrs. Taylor, of Loughborough, once) to produce a satisfactory peal of bells for the chimes of the Royal Exchange has been brought forward to prove the truth of the assertion. In the Westminster bell a composition with more tin in it than is usual in modern bells has been adopted:—

"The modern bell-founders (writes the author we have quoted) say that it ought to be four of copper to one of tin; and so they put in the metals in those proportions, or as near as they can guess at them. But tin wastes more than the copper in melting, and, moreover, the less tin is put in, the more any given waste alters the proportion; and, therefore, the bell comes out probably about 4½ to one, or even lower (as all these alloys are called high or low, according as there is much or little tin in them). I find that a considerable majority of the French authorities give 3½ to one as the right proportion, and some three, and only one is four to one. And still further, it is found by analyzing a piece of Old Tom of Lincoln, that the tin and a little antimony together are only one-fourth of the whole, or one-third of the copper; and in the old York bell metal also the tin is not one-fourth, but one-third of the copper."

Accidents out of the question, bells are generally cracked by being worn thin where the clapper strikes. "Ben" is to be hung in a manner of which our readers have heard something, so that when worn in one place he may be turned in the stock, and thus offer another part of himself to the clapper. Where the bell is to be placed appears to be still unsettled. Mr. Denison, in a recently published letter, calls upon Sir Benjamin Hall to see that it is hung in the upper part of the cast-iron roof of the clock tower, as otherwise half the sound will be wasted. This would be the best place for it in that respect; but if this requirement was not understood by Sir Charles Barry before the roof was constructed, it may now be difficult to provide the necessary strength.

SIR B. HALL AND THE METROPOLITAN BOARD OF WORKS.

THE MAIN DRAINAGE SCHEME—SOUTHWARK IMPROVEMENTS.

THE Chief Commissioner, as we expected, has returned the plan for the main drainage of the metropolis submitted to him by the Board, believing it to be at variance with the statute, which says,—"And such Board [the Metropolitan Board of Works] shall make such sewers and works as they may think necessary for preventing all, or any part, of the sewage of the metropolis from flowing or passing into the River Thames in or near the metropolis, and shall cause such other sewers and works to be completed on or before the 31st day of December, 1860."

Sir Benjamin Hall points out in his communication, that up to the 6th of October the Board had always postponed and ultimately rejected the plan they had since submitted. Were we not correct in saying, that "to chronicle such proceedings was simply waste of time and space?"

The chairman, in communicating the reply to the Board, on the 12th, stated his belief, that if a deputation were appointed to consult with the Chief Commissioner, it would be in their

* See page 627.

power to arrive at a conclusion on this subject, satisfactory to the Board and to the public. Friday, the 14th, was named to consider the question.

A deputation from the Board went to Sir Benjamin Hall, on Monday, the 10th, with the plan selected by them for the Southwark improvements, when Mr. Thwaites explained the route proposed. The line, he said, begins slightly below the Obelisk, in Wellington-street, at the south corner of York-street, without interfering with St. Saviour's Church, continuing on the north side across Red Lion-street and Counter-street, avoiding the Borough-market, which being corporate property, would be very expensive. It then avoids a clump of almshouses, called the College Almshouses, having a burial-ground and a church in the centre, passing close to Messrs. Barclay and Perkins's brewery, which occupies 11 acres, and which was not touched, as, if it were, the outlay would exceed the cost of the entire thoroughfare. It then passed on to the Southwark-bridge-road, taking off a small part of Messrs. Potts' extensive vinegar works, thence to the north of Messrs. Easton and Amos's ironfoundry, continuing its course to the south-west angle of some other almshouses, and on to a point marked on the plan "B," in the Blackfriars-road, exactly opposite Stamford-street. Although upon the plan, he continued, the street appeared to present a considerable curve, still upon the large scale of its construction it would be scarcely perceptible; but it was absolutely necessary, in order to avoid the enormous expense of trenching upon the valuable properties he had referred to. The proposed width of the street was 70 feet from front to front, with 12 feet footpath on either side.

A second deputation then took the place of the first. The gentlemen comprising this deputation appeared on the part of the inhabitants of High-street, Southwark, and were ushered in by Mr. Harris, member of the Metropolitan Board of Works for the district of Southwark.

The leader of the deputation, Mr. Newsom, said the inhabitants of the Borough were seriously affected by the stoppage of the thoroughfare, which commenced at the narrow part, caused by the projecting clump of houses, commencing with the Town-hall. Instead of the opening for the new street commencing at York-street, they desired that the opening should be lower down to the south, including the removal of the projecting clump of houses, as also the Town-hall. This plan could be carried out at an estimated cost of 41,000*l.* less than the plan proposed by the Metropolitan Board. It was something like Mr. Pennethorne's plan, which was generally approved.

A third deputation followed, with a plan, of which we need say nothing.

The Chief Commissioner has since signified his approval of the road proposed by the Board. It is to be regretted that it is not straighter.

CRYPT, GLOUCESTER CATHEDRAL.

In the notice of the improvements at Gloucester Cathedral, given last week (p. 603), we mentioned the change that had been effected in the *crypt*, under the direction of Mr. Waller, and described its present appearance. The engraving in our present impression will serve to make that account clearer.

AN ACCOUNT OF LONGLEAT, WILTSHIRE.

At the entertainment given here by the Marquis of Bath to the members of the Wiltshire Archæological Society, the Rev. Canon Jackson, of Leigh-delamere, read a very interesting account of this noble domain. Sir Richard Hoare derives the title from *Longa* and *Lata*, long and broad, as descriptive of the valley in which the house is situated. Mr. Jackson thinks differently, and says,—The word *leat* is an old noun, from the Saxon verb to lead, and signifies a water-course or aqueduct. There is near Plymouth an artificial channel of this kind, a celebrated piece of engineering made by Sir Francis Drake, for supplying that town with water, which bears the name of *The Leat*. The word also occurs in old Acts of Parliament. In Scotland, a mill-stream used to be called a mill-*leat*. The changes here have been so great, that it is of course difficult to say what may have been in ancient times, but it is most likely that the stream from Horningsham, which supplies the present garden, was originally used by some long channel for turning a mill.

The oldest document in which the name occurs is in Latin, dated A.D. 1289 (9 Edw. II.), nearly 600 years ago, in which the tythes of the church of Lullington, near Frome, were granted to the priory of "Lange-lete." Here, therefore, its regular history begins.

It was sold to Sir John Thynne in 1540. It was then a very humble place. And now let Mr. Jackson speak for himself:—

A fire having furnished Sir John with an excuse, in or about 1566, he sent for his architect, and gave the order for Longleat.

But who was the architect that he sent for? I am not aware that there is any positive written evidence of any kind, to show who he was. The accounts in the building, with all items of payment, are carefully preserved; but singularly enough, no architect's name appears in them. Tradition, it is true, names the man, and as that tradition has been consistent and uniform, I see no reason why it should be doubted. But before we try to settle that point, or rather, for the very purpose of helping to settle it, it may be useful to inquire for a few moments what style of house architecture had hitherto prevailed in England; and if the new house at Longleat was totally unlike the country houses that had preceded it, how came it to be unlike? how came this novelty of style to be adopted here?

Now the domestic architecture of any country in ancient times would take its character very much from the condition in which that country might be, especially with regard to the personal safety of the inhabitants. When England was torn in pieces by baronial jealousies, and one noble lord went to make a morning call upon another, not to leave a card and ask him to dinner, but to batter his house down about his ears,—in such precarious circumstances, the thicker the walls of the house were, the better for the gentleman on whom the call was made. A man's house is still his castle, *de jure*, in the eye of the law; but in those days his house was his castle, *de facto*. The houses of the nobility were nothing else than fortified dungeons, of which you have some very good examples at no great distance, in the ruins of Wardour, and at Nunney near Frome. The necessity of providing for self-defence became less and less, but the fashion lingered long after the necessity had ceased. Houses were next built in the form, and with much of the appearance, but without much of the real strength of castles. They had tower and gateway, battlement, and moat;—very feudal to look at, but not very strong, and certainly confined and dull to live in. One of the most complete specimens of this kind in England is Haddon Hall, in Derbyshire.

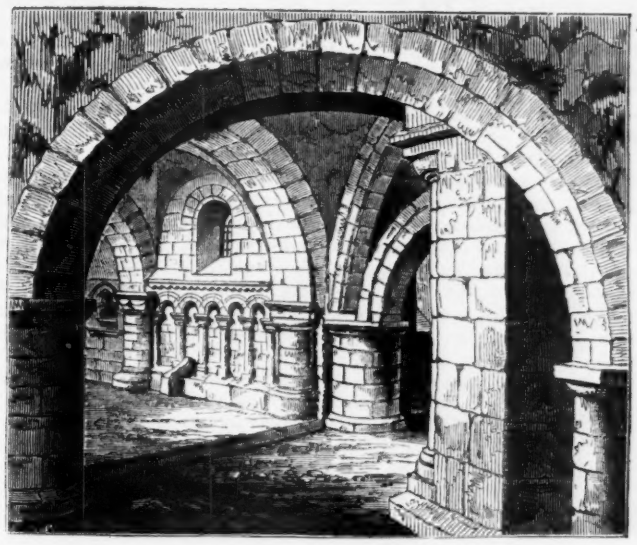
In the reign of Henry VII. these castellated houses were chiefly built with high ornamented gateways, and large projecting windows. I do not recollect any example near us; but the front of St. James's Palace, in London, and of Eton College, may be familiar, and will give an idea of the kind of house alluded to. This style may be described as having been, in the main, what is commonly called the Gothic, the pointed architecture of churches applied to that of houses, in order to take off the prison-like look of the Old English Castle.

We have in Wiltshire the remains of several private houses of gentry which will give a fair notion of what they generally were previous to the time of Sir John Thynne, in 1540. There is, first of all, South Wraxhall House, near Bradford, the property of Mr. Long, of which the oldest parts are thoroughly ecclesiastical. The gateway is of Henry VIII.'s reign—and other parts are of the reign of Elizabeth and James, with modern alterations. Place House, Tisbury, a grange of the Abbess of Shaftesbury, of the fourteenth and fifteenth centuries—ecclesiastical of course—most of the building gone—a gate-house left—the rest now a granary and dairy.

Norrington, in the Hundred of Chalk, an old house belonging now to the Wyndhams, built by the Gawens in the reign of Henry IV. has ecclesiastical windows. At Woodlands, near Mere, and at Potterne (the latter once the occasional residence of the Bishops of Sarum) there are, I understand, vestiges of houses of this class. The Bishop's Palace at Salisbury has some very ancient portions, but it has been so frequently altered by successive prelates, that it is not easy to distinguish which they are. Great Chalfield House, near Bradford, late in the fifteenth century, about 1490, is as good a specimen as we have of the old English manor-house; very collegiate in its appearance, yet having a vestige of the castle style in its moat and gate-house. The prevailing tone of house architecture before the reign of Henry VIII. was certainly ecclesiastical. And this explains in some degree why it is that one is so often told by the farmer's wife, at an old house, "they do say it was once a nunnery, or kind of abbey like." Not that there were such establishments in one-half the places in which they are thus supposed to have been, but the style of building, corresponding with that of nunneries and abbeys, often leads to the idea that they could have been nothing else. Henry VIII. who turned over many new leaves in England, introduced, amongst other changes, a novel style of house building. The style which he patronised (and, with all his faults, a nobler patron of the arts never existed in this country), was the ancient classic architecture of Greece, then lately revived in Italy. Upon the ecclesiastical or Gothic style, now beginning to expire, was engrafted the Corinthian, Ionic, or Tuscan. This is the way in which this kind of architecture is generally described: but it is considered by some to be, after all, a distinct and independent style of itself, of which we have, as yet, no proper history. The first known specimen of it is said to be on a monument in Canterbury Cathedral to Bishop Warham, who died in 1532. Of this novel mixture, Longleat is one of the purest examples. The house has also this peculiarity, that whereas we have, upon the whole, very few examples remaining of any old English mansion in its entire original state, this may be regarded, externally, as a complete specimen of its period. Most houses have been added to and altered; but Longleat, with very slight exception, is the same, as to the exterior, as when it was designed. The balustrades, the cupolas, and statues on the top are not original, but rather later—the present hall-door is also later—but, I believe, with these exceptions, the house has undergone, externally, no material change from the day it was first built. There are the large mullioned windows, of the earlier period of Henry VII.—and of the three stories, the pilasters in the lower one are of Doric character, in the middle Ionic, in the highest Corinthian—the chimneys are also in the form of columns, though, from its pilasters and entablatures, the architecture of the house, when examined, would be pronounced Grecian, or Italian. Still, its general effect and appearance are, after all, very much that of the old English Ecclesiastical. It is not really Ecclesiastical, because there are neither pointed windows nor tracery here: all is square; but the house has the old look, owing to the bold projection of the windows, and the varied outline of the roof, produced by the turrets and lofty chimneys. Observe, by the way, that the eight turrets, on the roof, are not placed at regular intervals, but in some kind of disorder. Perhaps this was done on purpose; the effect being to increase in the mind the idea of magnitude. For where everything is in exact symmetry, and all parts correspond, the eye takes in the whole object, and measures the plan at once, but irregularity leaves the eye perplexed, and more is left to imagination.

This new Italian fashion of Henry VIII.'s reign, was upon the whole adhered to in the reign of Edward VI. and the early part of Elizabeth. We have of this period, in Wiltshire, Littlecott, which retains much of its old character, though altered, and the south front of Corsham House, built in 1583. Longford is also of this date, but it is upon a somewhat eccentric model, borrowed from an island in Denmark. The Longleat style began to decline towards the reign of James I. much fantastic ornament and unmeaning device being introduced; still, during the decline, some very beautiful houses were built, of which we have good specimens in Wiltshire—in the Duke's House at Bradford, Charlton Park, and Stockton House.

Having now described to you in a few words



THE CRYPT, GLOUCESTER CATHEDRAL.

the kind of house that prevailed in England, down to the time of Sir John Thynne, and having shown that he was one of the first to adopt the new fashion, we have now to answer, if possible, the question, who was the architect employed by him? The tradition before alluded to is, that it was built from the design of John of Padua. That has been the constant belief; and, if nothing can be produced to the contrary, there is every reason for adopting it. In favour of it we certainly have these facts: Holbein the painter, and this John of Padua, are the two foreigners generally understood to have been employed by Henry VIII. in introducing the new kind of architecture. Of Holbein's taste in that direction, we have a specimen in Wiltshire, in the very pretty porch, formerly attached to the house, but now erected apart in the gardens of Wilton. But the misfortune is, that about this John of Padua no one is able to tell us anything at all. To use a term now growing much into use, John of Padua is a *myth*. Who he really was, what his family name was, whether he was born or only educated at Padua, what his works were before he came to England, we have, I believe, not a morsel of information. The little that is at present known upon the subject is merely this, that a person of the name was sent for by Henry; was appointed on his arrival, in 1544, to an office, the very title of which was entirely novel, "the deviser of his Majesty's buildings;" and that, by a deed dated in that year, the king assigned to him a certain daily stipend for his services. About three years afterwards (1547) Henry died. But the pension was renewed under Edward VI. by the Duke of Somerset, Protector, who took the Italian by the hand. In 1549 the duke employed him to design his great palace, in the Strand, called Somerset House; not the present building of that name, but the original one long since destroyed. Now old Somerset House, built by John of Padua, is always described as having abounded in ornaments of Roman architecture, and as having greatly resembled Longleat. This being so, does it not in some degree strengthen the ancient tradition as to this house? We find the Italian, architect to the Protector; Sir John Thynne, secretary to the Protector. The duke builds a palace in the Strand; the secretary, a few years afterwards, another near Warminster. Both palaces are in the newly introduced, and therefore highly fashionable, Italian style. The ornaments of the one strongly resemble those of the other. Now, in the absence of all positive proof upon the subject, yet, with this old tradition asserting the fact, and with these points of coincidence to support it, I think it may fairly be put to you, as an archæological jury, now sitting, as it were, on the very body—does not the circumstantial evidence favour the tradition, that Longleat was designed by John of Padua?

There is another nobleman's house in England still remaining, of about the same date as Longleat, and very strongly resembling it. Wollaton House, near Nottingham, built for Sir Francis Willoughby, and now the property of his descendant, Lord Middleton. Mr. Britton, in the 2nd vol. of his Architectural Antiquities, published in 1809 (p. 108), observes of Wollaton, that though the name of its architect is not positively recorded, yet when the general design, in composition and detail, is carefully compared with Longleat, there can be no hesitation in attributing the two buildings to the same artist. Indeed, he adds, "The uniformity of proportion in the pilasters, windows, and architectural ornaments, would lead us to suppose that these parts of the two houses were executed from the same working drawings." The resemblance here spoken of is certainly considerable, not only in the outside, but within; the two halls being very much upon the same model, corresponding very closely in arrangement, construction of roof, and style of screen.

At Wollaton House, two architects are believed to have been concerned. The first was John Thorpe, a person much employed in palatial edifices at that time. The second, his successor, John Smithson, as appears by a monument in Wollaton Church. From the resemblance between Wollaton and Longleat, some have fancied that John Thorpe and John of Padua may have been one and the same person. It was not uncommon for English patrons of art to fit out young men for study abroad; and it is not impossible that one who trudged away from his native village with a knapsack on his back as plain John Thorpe, may, after serving his apprenticeship to the Muses under the genial sun of Italy, have applied revival principles to his own name, and have come back to Old England a fine gentleman, to be thenceforth called Giovanni di Padova. But I am not aware of the slightest ground for supposing that such was the case in this instance. Thorpe is said to have been a native of Norfolk, and seems to have been always called by his English name. Some of his plans have been lately published by Mr. C. J. Richardson, in a work on Old English Mansions. He designed amongst others the following houses:—Theobald's Burghley, Wimbledon, Holdenby, Kirby, and Old Buckhurst.

In the meantime, whilst we have been settling what style and what architect Sir John Thynne shall choose for his new house, we have left him waiting to begin it. I will, therefore, only add upon this point one thing more, which is, that finding no mention of name or payment, or any notice of any kind of any architect whatever, some have said, that after all, Sir John was his own architect. It is hardly probable that this should have been the case in the proper sense of the word: it is not unlikely that having been furnished with designs he worked them out himself, and was his own clerk of the works. His accounts of the building are still preserved here. They commence 21st January, 1567 (which, according to modern reckoning, would be called January, 1568), and continue to 29th March, 1578, during which time rather more than 8,000*l.* had been spent; a sum which, of course, requires to be multiplied considerably to give any approximate notion of the cost in money of our own day.

With so many workmen about, one would fancy that Sir John would not be over well pleased to hear that Queen Elizabeth was coming to pay him a visit. Yet she came, for it is mentioned in the account of her progress in 1575, that she favoured him with her company on her way from Bristol. From Longleat she passed on to pay the like honour to Sir William Sharington, of Lacock Abbey, and subsequently went to Wilton. Queen Elizabeth was no builder of palaces herself: she had no occasion, having inherited a sufficient number from her father. It answered her purpose a great deal better to encourage her ministers to build large houses in which she might go to visit, and half ruin them by the compliment. Sir John Thynne died in 1580, leaving the larger portion of the outside finished, and from the Hall to the Chapel Court inside: no part of the western side seems to have been finished in his time. As to grounds, nothing seems to have been provided, mention being made only of a garden, hop-yard, and orchard, which were probably the old ones of the Priory.

The outer shell of a large house, 220 feet long by 180 feet deep, is certainly something, but by no means all. It is a skeleton, which, to look comely and to serve life's uses and luxuries, requires to be filled up, fattened, clothed, and adorned. These operations Sir John left to his successors. I believe that the building accounts were not continued after the founder's death; but there is a short descriptive summary of the progress and changes which took place under the various succeeding owners. The oak screen and wainscot of the hall were amongst the additions by his son, Sir John. Sir James, the fourth owner, employed Sir Christopher Wren, by whom a principal staircase was made; and a hall door, which, however, was afterwards removed to a school-house at Warminster. The old priory barn, which stood near the south-west corner of the house, was converted into stabling; and the Priory kitchen garden was walled and planted. In 1663, king Charles II. accompanied by the queen and Duke of York, visited Sir James Thynne.

In 1670, the estate came to Mr. Thomas Thynne, made eminent by Dryden, and who was assassinated by Count Konigsmark, and others employed by him, in Pall-mall, on the 12th of February, 1682.

Mr. Thynne having died without children, Longleat passed (in 1682) to his second cousin, Thomas Thynne, of Kempsford, in Gloucestershire, who was immediately created Baron Thynne, of Warminster, and first Viscount Weymouth. This nobleman held the property for thirty-two years, from 1682 to 1714; and, from the chronicle of the alterations in the house, it appears that he had a considerable share in them. The domestic chapel was now finished It was consecrated 19th August, 1684; the sermon (from 2 Chron. vii. 16) being preached by Richard Roderick, B.D. of Christ Church, Oxford, and Vicar of Blandford Forum, Dorset; afterwards printed, with a dedication to his lordship.

Large improvements, in the taste of the age, seem to have been made in the gardens. Indeed, it would almost appear as if the first ornamental garden of any size was made at this time. The style adopted was the Dutch, introduced into England by William and Mary. Lord Weymouth laid out his ground according to the plan shown in the old engraving of the house by Kiproves, and long avenues, with vistas and artificial mounds, were planted: the original *leat* was widened at intervals into fish-ponds, all rigorously angular: flower-beds were described in chequered and geometric figures; the very gooseberry and currant bushes in the kitchen-garden drilled to grow in squares or parallelograms, trimmed up as stiff and stately as lords and ladies at the court of the Hague. From

the front door of the house, a long raised terrace, on a level with the highest step, projected forward to the entrance-gates.

* * * *

From dates, and other circumstances, it would appear that the house at Longleat must now have remained without a resident proprietor for forty years. There was the minority of seventeen years, to May, 1731; and then on coming, or soon after coming, of age, the second Lord Weymouth appears to have forsaken it, and to have lived in an old manor-house in the village of Horningsham. He died at the early age of forty, in 1751, and was buried in Horningsham Churchyard. He was ranger of Hyde-park and St. James's-park. His son, the third Lord Weymouth, was eighteen years old at his father's death. On coming of age, in 1754, he found plenty to do; the garden and ornamental grounds in the Dutch style (as introduced by the first Lord, and as seen in the old print) having fallen, not only into disorder, but wholly out of fashion: the taste for foreign gardens had gone by. For the work of restoration he called in the celebrated landscape gardener of the day; who, from his invariable habit of pointing out to his employers the great capability of their grounds, earned for himself the name of Capability Brown. So great a personage deserves a stately introduction: let Cowper marshal him in:—

> "Lo! he comes:
> The omnipotent magician, Brown, appears:
> He speaks: the lawn in front becomes a lake;
> Woods vanish! hills subside and valleys rise;
> And streams—as if created for his use—
> Pursue the track of his directing wand—
> Sinuous or straight, now rapid and now slow,
> Now murmuring soft, now roaring in cascades—
> E'en as he bids. Th' enraptured owner smiles:
> 'Tis finished; and yet, finished as it seems,
> Still wants—a mine to satisfy the cast."

Obedient to this magical wand, the Dutch formalities disappeared; plants and trees, released from regimental discipline, were ordered to stand at ease, or to take up new positions more agreeable to the principles of English liberty. The great difficulty appears to have been how to manage the water: the natural stream was by no means commensurate with the *grandeur* of Longleat. I do not bestow that epithet on this place without sufficient reason; because the impression produced upon most minds, when the whole view of this house, gardens, and demesne lies under the eye, surveying it from a height, certainly is, that taking it altogether it is the very *beau ideal* of an English baronial residence. John Aubrey (not unhappily) calls it the most august house in England. The natural hills and valleys, the great masses of wood with which the hills have been clothed, the extensive range of park, the command of prospect, and the style of the house itself, produce, altogether, a character of grandeur, which is in this country at least peculiar to Longleat. Mr. Repton justly observes that there is a vast difference between the grand and the great. For example, 4,000 acres with a paling round them, and a cotton factory in the centre, all in the middle of Salisbury Plain, might be great; but nobody would think of calling them grand. Greatness of dimension is one thing: greatness of character is quite another. The two are often confounded; but, though the difference may not, perhaps, be so easy to describe, the eye detects it in a moment. Therefore, to bring the water forward into proportion with all the other features of Longleat was absolutely necessary. The stream itself was nothing but a watercourse, large enough for driving the old Priory mill, but insignificant in appearance when passing through spacious grounds close to a spacious mansion. In the artificial Dutch garden the brook had been enlarged a little into a straight canal and fishponds, as seen in Kip's view; but when these were abolished the problem was how to give greater expansion to the water. Various plans were considered, and the one adopted at a prodigious expense (as Cowper's introduction prognosticates), was to produce the idea of a large river flowing through the demesne, widened by serpentine lines into a lake. The Viscount Weymouth, by whom this alteration was made, was a Lord of the Bedchamber to George III. (1760), master of the horse to Queen Charlotte (1764), and Lord Lieutenant of Ireland (1765). In 1789 he was created Marquis of Bath, and in September of that year he had the honour of receiving, as guest at Longleat, the king, queen, and princesses, with a suite of forty persons.

The words of Mr. Repton, speaking in 1803, apply with equal propriety in 1856. "This magnificent estate, so far from being locked up to exclude mankind from partaking of its scenery, is always open, and visitors are allowed freely to amuse themselves; which circumstance tends to enliven the scene; to extend a more general knowledge of its beauty to strangers; and to mark the liberality of the noble proprietor in thus deigning to share with others the good he enjoys."

THE VENTILATION OF HOSPITALS.

In your number for October 25th, a writer on "The Ventilation of Hospitals" appears to have devoted much study to this intricate subject, and to have weighed all matters connected with it in a masterly and scientific manner. May I be permitted, however, to offer a few observations on the above interesting subject, and to state (on the threshold) that mere scientific disquisition, and theoretical argument, though they be founded on the surest basis, will not suffice to settle the inquiry, and place the matter in a perspicuous and intelligible form. I have been a professional observer of the system of ventilation adopted by our public hospitals, for the last twenty-five years, and I must add, with all courtesy to the writer in question, that he takes merely a scientific, and, therefore, a very partial view of the point under consideration. His expressions are occasionally somewhat vague: thus, he remarks. "The air expired from the lungs has not a temperature sufficiently elevated to raise it even to a couple of feet above the head, without its undergoing diffusion from the combined influence of the law of gases, and of the rapidity with which it parts with its excess of temperature, and the disturbing effects of currents of air, the direction of which is only capable of being partially controlled."

The observation which shortly follows is not borne out by practical experience, viz. that "the admission of direct currents of air is impracticable in this climate during two-thirds of the year. Hence we are driven to scientific means for obtaining such an artificial ventilation as shall compensate, so far as may be, for the loss of natural ventilation."

In these and other remarks which follow, it is evident that your correspondent has not studied the subject *au fond:* in short, he has not "walked the hospitals," as a student in scientific ventilation, for a quarter of a century. I would, therefore, beg to add a few remarks and suggestions to those already made by Mr. Rosser. In the first place, we cannot fail to be struck with the fact, that allusion is rarely made in these matters to the great and main source of a vitiated hospital atmosphere: it is not the expiration of so many cubic feet of deoxidized air per minute, by twenty or thirty inmates of a sick room; neither is it the superadded impure exhalation from the pulmonary surfaces in diseases of the respiratory organs, as in bronchitis, consumption, inflammation of the lungs, &c. &c.; but it is the general noxious malaria which is constantly passing off from the bodies of individuals labouring under some of the severest forms of disease which "flesh is heir to." For instance, a non-professional friend of mine can walk, with perfect impunity, down the centre of our largest wards, but if he converses with the patients, or sits for a few minutes near the beds, he is usually seized with what he terms a "distressing light headache." During the twenty-five years in which I have had the honour of being connected with the Middlesex Hospital, we have had (if I may so say) three distinct systems of ventilation,—that of the old hospital of 1830, that of 1836, and that of 1849. In the last improvement, ventilation has been carried out in a complete and most satisfactory manner. The windows are tripartite, and open inwards from 2 to 8 inches: they are worked upon a semicircular plate by an iron handle and upright rods and slides. The summits of the walls of the new wards are also furnished with a given number of perforated zinc plates, which allow communication with the exterior air, and, excepting in seasons of intense cold, these are rarely all closed. Our walls are composed of non-absorbing surfaces, by means of Parian cement; and we have wholly abandoned curtains to the beds, unless it be in special cases.

By such precautions, those fearful pests of our metropolitan hospitals, erysipelas, gangrene, pyæmia, and fevers, &c, have entirely left our wards, and although we have had a larger share of typhus during the past summer than usually, yet I am thankful to add that there has not arisen a single instance of contagion. Erysipelas and pyæmia, so frequent and fatal in our old hospitals, are now rarely seen in the wards as idiopathic diseases. In short, it may be asserted that where a perfect system of ventilation is adopted by means of external air, with such a position of the water-closet as is met with in our building, there can be no opportunity for any foul air to obtain a "nidus" around the beds: the diffusion throughout the general atmosphere of the ward becomes so complete that, although the windows are closed, the open zinc traps pour in a constant supply of cold air, which feeds the ward fires and carries any foul admixtures up the chimneys.

Our closets are provided with double doors, so that "the pumping action" of a single door is avoided. A lobby exists between each door, and the whole range of closets is extra-mural of the building from the basement upward. The seats are fitted with self-acting flushings for the pan, and the only complaint that is made is of the disagreeable draught from the action of the ward-door when the inner door is improperly fixed open. This may be obviated by adjusting the inner door with self-closing hinges.

In conclusion, therefore, it may be observed that Mr. Rosser's statement that "when an upward ventilation by one or two extraction openings in a flat ceiling is sought to be accomplished, it is impossible to prevent the vitiated air from being disseminated throughout the atmosphere of the ward," must be taken with reserve, for there have been such extraction openings in operation in the walls of our back wings since 1849, and the sanitary influence upon the patients has been most decisive and satisfactory.

GEO. CORFE, M.D.

ARCHITECTURAL NOTES IN ANGLESEA.

The town of Beaumaris seems to have been of no importance before the erection of the castle and walls by Edward I. Anglesea had been held by the English from the year 1277, when the fleet of that nation subdued it with little opposition on the part of the Welsh. Frequent insurrections, however, determined Edward to erect a fortress and keep a garrison in the island; and after the rising of the Welsh under Mudoc, son of Llewellyn, in 1294, it was begun in the same year, and finished two years after. The work is a gigantic one, when the difficulty of transit at the period in which the castle was built is taken into consideration; and it seems doubtful whether modern engineers could erect a fortress of such bulk and solidity in a shorter time, and at the same time attend to the high finish and perfect adaptation of all the various parts, such as are apparent here. The remedy applied by Edward to avert the disturbances and revolts so frequent before the erection of the castle, appears to have been effectual: no more is heard of the town that makes any figure in history till the period of the Great Rebellion, when the castle and town were garrisoned for the king. They were, however, surrendered to the Parliament shortly afterwards with little resistance. On the imprisonment of Charles they were again seized by the Royalists, and again attacked by the Parliamentary forces under General Mytton. On this occasion a more spirited resistance was made. A battle ensued, which, though partly favourable to the Royal troops, ended in their withdrawing within the town. Captain Lloyd, of Penhenllys, of the Royal forces in the town, however, being pressed by the enemy, thought fit to run away, after locking up his detachment in the church. Here they fought manfully, and caused the loss

of many officers and men to Mytton's army. The position of the church is indeed well calculated for defence, as it stands on a rising ground, and overlooks the town wall to the west—the wall serving as an outer defence, while the raised churchyard commands the entire town. Driven from this position, the castle still held out, but was afterwards surrendered on honourable terms. From being in the possession of the Crown, this fortress passed afterwards to the Bulkely family.

The castle, standing as it does in a flat meadow, and very little above high-water mark, is not very conspicuous, as are Conway and Caernarvon Castles; nevertheless, the building itself is even more strongly fortified than these larger buildings. No precaution has been neglected for its security, owing to the natural position being defective for defence. It stands within 100 yards of the beach, at the south-east angle of the town walls, but outside them, and quite detached from them. The moat is very wide, and was formerly connected by a short canal with the sea: in fact, a kind of dock was formed under the castle walls, where vessels could unload stores at the gates: the ring for mooring still remains fixed in one of the towers. A long wall projecting towards the south, pierced by two galleries, and strengthened by two small towers, crosses the moat from the south front, and is evidently intended as a protection for the vessels moored at the gate. The main body of the castle is encircled by a wall, having massive round towers at each angle, beside minor ones at short intervals, while on the north and south sides are strong gate-houses: that at the north has two round towers, corbelled out from square bases, set anglewise, and is very picturesque: the south gate is of very different design, and of fine proportions. A broad square tower projects beyond the wall, its north front being, as it were, opened as far back as the line of the curtain wall, by three lofty recessed arches of pointed form, and the roof of these recesses is formed by ribs following the form of the outer arch. In the centre compartment the gate is pierced through the wall, the arches being about half the height of the arched recess; while in each side compartment is a small sallyport, sufficient to admit only one man at once. Neither of the gate-houses stands in a direct line with the corresponding gates in the main building. The inner building is a paralellogram, 190 feet by 170 feet. At each corner, and in the centre of each side wall, is a huge round bastion, while the north and south ends have each two bastions in the centre, between which are the main gates. The interior is remarkable for the great hall, which stands on the north side, having five windows towards the inner court, which are of a design peculiar to the castles of Edward I. They are very large when compared with the usual proportions of castle windows, the inner arches being segmental pointed, the outer a flattened ellipse. There appear to have been a transome and mullion in the lower half, but no remains of tracery can be discovered, notwithstanding the great breadth of the windows: possibly it may have been framed in wood. Each habitable room has had a large and well-wrought fireplace, of almost identical design, though varied in size. The great hall has two corbelled out from the wall, with a flat lintel and the masonry above, sloped back, till it dies into the wall, near the ceiling. The roof of the hall has been of timber, supported by moulded corbels, rather low down the inner walls, and from their standing at two different heights, probably a superior and inferior set of principals were used to form the roof.

The rooms in most of the round towers have an arch, either pointed, or the segment of a circle, thrown across them, to support the floors and roofs. At the south side of the castle-yard, a similar building to the hall has apparently stood, having like that round staircase turrets at each angle towards the court, but only the foundations now remain. The chapel stands in the centre of the east side, in the round bastion: five narrow lancet windows light it, and its interior shape is semi-octagon, its proportions and appearance being similar to the apse of a church. It is simply groined with chamfered ribs, and in each angle of the chapel stands a clustered pier attached to the wall, and bearing an arch and the groining, the centre of the arch being pierced by a pointed window, but the vast thickness of the wall allows but little light to enter. An arcaded and cusped panelling surrounds the whole of the lower part of the chapel; and on the west side, two panels are pierced, forming a double doorway, entering first a gallery that runs in the thickness of the wall round the castle; and on the other side of this gallery, a moulded arch opens into the courtyard, though there appears to have been originally a suite of rooms of slighter construction on this side of the Castle-yard, as there are the remains of a fireplace in the wall near to the chapel door. Either a wooden gallery, or a low building with a terraced roof, must have run along the east and west sides of the court, as doors from the towers and the chapel open into the court-yard, some 9 or 10 feet from the ground. The masonry of the walls throughout seems to give some evidence of the haste in which the castle was erected, being an irregular mixture of the slaty stone of the neighbourhood with cubical blocks of Penmon stone, but the outer walls seem to have been brought up to one even line above the first tier of loopholes, as though it had first been finished to that height, and made defensible, and afterwards raised to its present height.

The south-west bastion, and a few other portions of the inner building, have cubes of Penmon stone regularly alternated with slaty limestone of darker shade, thus giving a diapered or chess-board appearance to the masonry. It is worthy of note, also, that where a round or elliptical arch is used in the window or door recesses, or inner arches, that the outer arch is pointed, and *vice versa*: thus in the hall the inner arch is pointed, the outer a flattened ellipse. In the mouldings of the chapel, which, unfortunately, are much too delicate for the gritstone in which they are cut, there is a prevalence of chamfers and shallow hollow mouldings, unusual for the period, and the whole of the ornament is formed by tracery and mouldings: no sculptured foliage, heads, or masks are anywhere used. Though Beaumaris Castle may lack the picturesqueness of many others in the principality, it is one of the best preserved and strongest, and in some points more interesting than most others.

Of the town walls there are a few remains. On the west side of the tower, running at right angles with the strait from north to south, stands the largest fragment, and a few hundred yards towards the north stands another fragment, about 30 yards long, running from east to west. There are some faint traces in the old houses a little beyond this that may be the remains of a gate with a projecting barbican. The wall facing the Menai Strait was taken down in 1831 to build the Bulkely Arms Hotel and a terrace of new houses. It joined the west wall by turning towards the north-west, thus cutting off the angle, and forming a portion of an octagon towards the shore. This last-named portion was standing six years ago, but the builders of new houses have been allowed to use it as a quarry, and this summer workmen were busy rooting up the last fragments of its foundations for the sake of the stones. They complained to me of the extreme hardness of the mortar, which tradition says was poured in hot. The wall of the town shows no trace of towers. It is roughly built of large unhewn blocks of stone, but the strength of the mortar makes it very strong. The thickness is about 5 feet, and the parapet is built of the same rough stone, and neither crenellated nor loopholed: it is much inferior work to the castle. The main portion may be 150 yards long, beginning about 50 yards from the beach, and terminating at the churchyard. A new street is projected, which will destroy this and several other very interesting relics, that ought to be spared if possible.* E. W. C.

ELECTION OF SURVEYOR FOR DISTRICT OF NEWINGTON.—We are asked to mention that the number of votes recorded for Mr. Henry Hart, was nine instead of eight, as stated.

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* To be continued.

SHOWING WESTMINSTER ABBEY.

IN the *Builder* (p. 597, *ante*) was published a communication from Mr. Luke Berrington, one of the guides of Westminster Abbey, in reply to some remarks on the present manner of showing that place. Mr. Berrington states that, during the time of the Great Exhibition, the plan proposed of throwing open the tombs of the kings, &c. to visitors without the attendance of guides was tried, *and it is satisfactory that no complaint of damage seems to have been made*. The writer says, "I am prepared to assert that a large majority of visitors to the tombs, if left only for a few minutes in a chapel by themselves, were anxiously inquiring, 'where is the guide?' and although the tombs were not actually 'ticketted,' still there were plans of all the chapels, and large cards, descriptive of the monuments, placed in abundance in all directions throughout the chapels." Now, these cards are still lying about, and show a rough ground-plan of each chapel; and the position of the various tombs is numbered,—for instance, No. 1. Edward the Confessor's shrine; No. 2. Queen Eleanor; No. 3. Shrine of Henry V.; and so on. Some who visit the Abbey do not understand ground-plans, and others will not take the trouble to look at them; and even to those who do, this reference is by far too brief and uninteresting: if, however, there were placed against each tomb, as recommended, a small tablet on a stand, of good design, not fixed to the monument, on which would be legibly inscribed the date, &c. of the tomb, and a few brief yet well selected particulars of the person who there rests, such notes immediately in conjunction with each object would make the Abbey serve the purposes of a vast and deeply interesting book: the notes would be useful to those not much learned, and also be the means of refreshing the memory of the better informed: and, moreover, the guides or custodians of the Abbey would be at hand in the various places to answer any inquiry. It might also be worth while to translate some of the most interesting inscriptions, which are in Latin, into English, both in the chapels and other parts of the Abbey; for instance, many who read on the plain yet appropriate slab which covers the resting-place of Addison,—

"ADDISON.

Ne'er to these chambers, where the mighty rest,
Since their foundation came a nobler guest,
Nor ere was to the bowers of bliss conveyed—
A fairer spirit, or more welcome shade;
Oh, gone for ever—take this last adieu,
And sleep in peace next thy loved Montague.

Egerton Earl of Ellesmere.
P. C. 1849. "Born 1672, died 1719."

many of those, we say, who read this English inscription, and who are not Latin scholars, would like to be helped to decipher the inscription on Lord Montague's monument, which is adjoining. The venerable Abbey might be made most useful as a place where the youth of both sexes could learn impressive lessons on the history of their own country, in the presence of the forms, and close to the ashes, of illustrious personages, who have figured in former times; and for this purpose more is required than the half-hour's ramble amongst the tombs with the guides. Hundreds of parents would like to take their families to Westminster Abbey, and, in their own way and with patience, explain the various and interesting particulars connected with the place. Many teachers of schools might also be glad to avail themselves of the opportunity of explaining to their pupils these historical stone records.

Sometimes twenty-five or thirty persons follow the guides like a flock of sheep, and it takes, perhaps, three minutes—it may be not so much—to show the Confessor's Chapel, a thing of picturesque beauty in itself, and abounding in associations. No doubt some of this number are of the description of sightseers who rush up to London for a week and have the whole town to see in that time. In one day they do the Thames Tunnel, the Tower, the Mint, they fly into the docks and bonding-houses, catch a peep at the Lord Mayor in the Mansion-House, Gog and Magog in Guildhall, run through the Rotunda at the Bank, the Royal Exchange, look in at St. Paul's, snatch a hasty dinner, hurry to get in time to one of the theatres, and, as

Pepys says, "so home" in a cab, with head aching and bewildered. This class of persons, no doubt, approve of the most rapid manner of showing monuments, for they do not care so much about the sights as being able to say what they have seen, and to boast "What do you think of that for a day's work?" There are, however, many in each company who would fain ponder amongst the tombs, either for the purpose of learning history, or in the enjoyment of the thoughts and ideas which cannot fail to be suggested even to the heedless.

THE DISCOVERY AT CHRIST CHURCH, OXFORD.

THE OXFORD ARCHITECTURAL SOCIETY.

At the second meeting of this society, held on the 5th inst. the Master of University College in the chair, Mr. James Parker said he had been deputed that evening to describe the curious chamber which had been so recently found during the repairs of the cathedral, and he would mention the four theories which had been suggested respecting it. He had a very effective drawing which Mr. J. Billing, the architect who was so satisfactorily restoring the cathedral, had kindly made, he believed, especially for the benefit of that society.

Immediately beneath the large organ-loft, the builders, in digging a trench for the hot-air pipes, came suddenly upon some masonry which proved to be a stone-built chamber, 7 feet long by 5½ feet wide by 7 feet high. The interior was plastered, with three small incised crosses marked on it, and also some traces of red colour. There was also a small recess, about a foot square, on the north side, and another a little larger on the south side. In one corner there was what seemed to be the springing of an arch either for the vaulting, or as a sort of shoulder to support slabs of stone which might have been the original covering. On the east side it seemed that a great part of the wall was wanting, so that, possibly, there might have been an entrance-doorway upon this side, the jamb of which both the architect and builder thought they could detect. The whole had been covered up, and upon the materials which they possessed, they had now to bring to bear what evidence they could from analogy or history of the original purpose of the cave.

The only similar instances which had been suggested were the crypts of Hexham and Ripon; but in both these cases there were a series of underground chambers, with passages leading to them, so that worshippers might enter and pray before the relics which were placed there. The first theory, then, was, that the subterranean building was a Reliquary Chamber, but the difficulty of access seemed rather to overthrow this theory.

Next it was suggested that, if not used for the exposure of relics, it might have been used for their safe custody, either as a usual receptacle for the costly shrine when not wanted for any ceremony, or for concealing it, with other valuable property, in time of danger. However, to this it may be said, that it would be a very awkward place for the ordinary keeping of the shrine,—and in the last position, viz. at the entrance to the choir, likely to be chosen for a place of concealment.

Thirdly,—He would suggest that it might have been the burial-chamber of St. Frideswide, and he therefore entered somewhat into the history of the present building, which was built by Wimund on the spot where St. Frideswide was buried. This virgin saint had been interred in the church belonging to her own nunnery; but this, as it was of wood—as was usually the case with churches at the time—had been totally destroyed by fire. There was, however, to this theory more than one grave objection, *e.g.*—that there was no room for a coffin to have been placed in this chamber from east to west, as was the customary mode of Christian burial in early times. Also, that the portion of the arch in the corner seemed to prove it to be the work of a period not anterior to the Norman Conquest.

He had still, however, a fourth theory, which he thought it right to mention, though he was not prepared with the arguments upon which it was founded,—namely, that it was connected with an altar tomb or shrine above, and might have been used for the purpose of effecting miracles, as there was room for a man to move about in it, and it seemed to have had originally an entrance, and probably a passage from the east end of the church.

Mr. Bennett differed with Mr. James Parker as to the probability of its being the grave of St. Frideswide. Its position was against it. It was neither near the high altar, nor yet in the centre of the church. It was not in accordance with what is known of sepulture at the time, and besides that, the orientation he considered also much against the theory. At the same time he would say a few words on the theory which Mr. Parker had mentioned last of all. He had seen constantly, on the continent, instances of the exhibition of images of saints at the entrance to the choir; and although he did not find, after a careful examination of the miracles which are recorded to have been wrought at the shrine of St. Frideswide, any notice of moving figures, yet he did find records of many which seemed to depend on a bright halo of light being suddenly and mysteriously thrown round the shrine, which might have been easily effected by any one concealed in such a chamber as this.

THE PURIFICATION OF THE THAMES.

Engineers may inlay the earth with sewers a hundred miles long, but the Thames will not be purified except by the removal of those vast banks of sewage guano which have formed under the noses of our forefathers since the time of Alfred the Great. Talk of Peruvian deposits indeed! Here are millions of tons of solid sewage, which, if it possesses but half the amount of fertilizing quality imputed to it, may at once be sold (*in situ*) by auction to our agriculturists: if it bring but a shilling a ton it would be all profit to our corporation.

It is to these mud-banks, stirred by tide and churned up by a hundred paddle-wheels from morning to night, that the filthy state of the river is entirely due. We cannot suppress steam-boats; but, with the consent of our conservators, we may abolish mud.

I propose, then, that a thousand barges be bought or hired, and twenty thousand strong arms employed to fill them with this "precious stuff." Father Thames will be but too glad to redeem his character by "tiding" it to the wilds of Essex or the marshes of Kent; and let the farmers be thankful and pay for it like Britons when brought to them, or suffer the shame of seeing it thrown into the sea.

If proof of the common sense and truth of these remarks be required, it may be had at a trifling cost, viz. filling a pint pot with Thames water at four o'clock in the morning, and another at four o'clock in the afternoon, at a given spot; then evaporating the water of each, and weighing the dry residuum. The difference of weight of solid matter of the samples will give the sum total of the paddle-wheel influence on the mud-banks before alluded to. E. P.

THE GOVERNMENT COMPETITIONS.

It may be useful to the profession to know, that the remaining sheets of the Westminster detail survey are lying at the office of the Metropolitan Board of Works, Greek-street, Soho-square. The sheet that joins on to the one issued by the Government to architects, contains the entire detail of the new palace, the Abbey, and Abbey precincts, &c. together with all the private property extending some distance up Birdcage-walk. This survey was carefully made by me in the year 1849, for the then Commissioners of Sewers. S. A. Matthews.

DECORATION OF THE LONDON GUILD-HALL, ON THE 10TH, AND THE "SHOW."

According to the newspapers, the hall was fitted up with portraits of the Sovereigns of Europe, and the eastern window had a representation of Peace descending from above encouraging Agriculture and Commerce. On the western window were delineated the arts, poetry, painting, sculpture, music, and architecture, in the centre of which was placed the glass star, and over the gallery, on the south side of the hall, was the now well-known plume of feathers of spun glass.

On either side of the entrance to the lobbies leading to the Council Chamber, stood a golden figure of Plenty, with baskets of flowers on their heads. The first lobby contained Bell's "Eagle-slayer," and a statue of "Genius chained," by Durham.

On the north side of the Aldermen's Court-room, a large temporary conservatory was fitted up, in the centre of which was the statue of Australia, by Bell, backed up with a picture representing Melbourne, painted by Mr. Frederick Fenton. There was also in the Aldermen's room a bust of the Right Hon. the Lord Mayor, by Lough; the statue of Dorothea, by Bell; and the statue of Whittington, by Carew. The representation of the Bayeux tapestry, mentioned by us on a previous occasion, and some other decorations of other years, appear to have performed service in the approaches.

In the "Show," in the morning, the proposal made in this journal some years ago, at the advent of Lord Mayor Musgrove, to improve the character of the pageant, was to some extent followed out by the introduction of some allegorical devices by Mr. Sheriff Mechi, which seemed to excite more interest than any other portion of the procession. These devices consisted of a traction engine and an endless railway, specially adapted for agricultural purposes, drawn by six horses (Boydell's patent); a prize reaping-machine in a car, decorated with agricultural produce from Tiptree-hall Farm, drawn by four horses (Burgess and Key's patent); and a steam plough drawn by two horses (Fowler's patent).

BUILDING ACCIDENTS.

Fall of a Bridge near Darlington.—A bridge, just erected over the Tees at Dinsdale, fell last week while the men were removing the centres from the arches. Two of the men were killed and several severely injured. The bridge was being erected on old stone buttresses, turning upon them four brick arches, three spanning the river, and one land arch on the Durham side, varying from 45 feet to 48 feet span. When the arches gave way, nothing remained but the land arch and the stone buttresses.

Fall of a House at Longton.—An old house in George-street, close to the gable of which some excavations for a cellar had been brought in close proximity, fell last week, while inhabited by a family of poor people, who all, however, escaped in time.

Fall of Scaffolding near Rochdale.—An accident took place at a new house in course of erection at the Sparth bar, on Thursday in last week. The third story was nearly up, and the scaffolding was so insecurely fixed that just as the men were commencing work it fell down. The planks, bricks, and mortar fell upon the men, and most of them were sadly cut and bruised about the head.

Fall of a Floor in Perth.—In Bridgend, a savings-bank for children has existed for some time, called the Kinnoull Penny Savings Bank. The business was conducted in an old house for cheapness. On Saturday a greater number of depositors than usual were ready with their pennies: when the doors opened, a rush ensued, and down went the floor, accountant, depositors, and all, into the cellar. Happily, no great harm was done, and the savings were all saved.

Fall of a House in Paris.—The inhabitants of the Faubourg St. Antoine were lately alarmed by the fall of a house, in course of erection, in the Passage Richard Lenoir, No. 7. It had already reached the third story, and its present destruction, says *Galignani*, is complete. Under the rubbish were buried six workmen. One had received dangerous wounds, and another expired on the way to an hospital.

THE EARLY WATER SUPPLY OF LONDON.

With reference to your account of the conduits which supplied a part of London thirty years ago, thirty years ago I made some examinations in Lamb's Conduit-street at the northern end, and found some remains of what I take to have been Lamb's Conduit, and which I have every reason to believe still continue in the same state. There were two conduits under the middle of the street, with arched communication, and a doorway into the front area of No. 42, Lamb's Conduit street.

This neighbourhood originally consisted of a fine yellow red gravel, of some 12 or more feet deep, resting on a clay, and appears to have been abundantly supplied with fine water running on the clay, as the many old pumps and receptacles prove. Among these last I may class another construction under the back premises of No. 2, Chapel-street, Lamb's Conduit-street, evidently an ancient conduit, 6 feet wide and 8 feet 6 inches high, built in a chalk-like freestone, with blunt-pointed arch of the same material.

With respect to the conduit in Conduit-street, Hanover-square, the channel which supplied it—a brick sewer-like construction—ran past the fronts of the houses in Avery-row, behind Bond-street. It was partially destroyed some thirty years ago, when the large sewer was rebuilt there, at which time I saw some 30 feet in length of it in very good condition.

Some twenty-five years ago the paving commissioners of St. Andrew's, Holborn, and St. George's the Martyr, caused wells to be dug and pumps to be erected in various parts of these parishes, for supplying the carts for watering the streets, among the rest at the west end of Middle-row, Holborn. The surveyor of pavings under whose directions these wells were dug, told me that the influx of water into the excavation for that well was so great that they could not keep it sufficiently down with the means at command to enable them to carry it so deep as intended. This accords with your notice of the "Old Bourne, a rivulet spring which rose near the Middle-row, not far from the bottom of Gray's-inn-lane." Aquarius.

A Glass Roof for the Post-Office, St. Martin's-le-Grand. — A massive scaffolding in the vestibule of the Post-Office has been raised in order to replace the roof with one of glass. Other alterations are in progress to remove the entire receiving-department to the south wing.

THE PEERS' STAIRCASE, WESTMINSTER PALACE.——Sir Charles Barry, R.A. Architect.

[See p. 621, in present number.

CHURCH-BUILDING NEWS.

Newark. — The new burial-ground here, though in an unfinished state, has been opened for interments. The ground is about 9½ acres in extent, and is situated on the London road. The chapels are in the Gothic style of architecture, and were designed by Messrs. Bellamy and Hardy, of Lincoln; and built by Mr. J. Whitworth, of Newark. They are erected in the centre of the ground, being united by a lofty arch, under which passes the principal walk, and over it stands a decorated steeple and spire, 80 feet in height. The entrance lodge is of brick and stone. The front palisade and entrance-gates were designed by Messrs. Bellamy and Co. and cast at the foundry of Messrs. Midworth, of Newark.

Norwich.—The completion of the restoration of St. Peter's Church, it seems, is now determined upon, and the nave is to be benched in a similar but less costly style to the chancel benching: 400*l.* have been already contributed, and 200*l.* more are required for this purpose.

Sutton-cum-Lound. — The parish church of Sutton-cum-Lound, near Retford, has been re-opened. Opposite to the springing of the Norman chancel arch, the architect has put a half arch as an abutment in the north aisle, also a buttress opposite the south side of the church. The east window, of the Flamboyant style, has now been restored. Throughout the church there is carried out a high-pitched roof, with carved stone heads, at the springing of each principal. The nave south wall has been cased throughout with new ashlar stone. In the same side of the church the architect has put in two traceried windows in the Perpendicular style. The porch has been rebuilt. The interior fittings are of oak, having panelled heads with poppy-heads, and some old benches have been cleaned and restored, the rest being made of deal stained to assimilate with the others. The flooring is of red deal, the aisles being of rubbed Yorkshire stone, and the chancel is paved with similar stone. The stained glass centre light in the east window is a figure of our Lord seated, and below this the Crucifixion. It was painted by Mr. O'Connor, of London. The edifice has had all its pinnacles, battlements, carved gurgoyles, and cornices, restored. The churchyard was also partly levelled, and the walks widened and laid with gravel. Mr. Arthur Wilson, of Peterborough, architect, was entrusted with the restoration of the church, as well as that of the church and the building of the Rectory-house, at Treswell, near Retford. Mr. William Lee, contractor, Mr. Roberts, joiner and builder, and Mr. W. Welch, plumber, all of Retford, carried out the designs of the architect.

Maidstone.—The vestry of Maidstone have just resolved to purchase, from the Earl of Romney, 20 acres of ground, near Mangravit Wood, for a cemetery. The price they are to pay is 3,775*l.* Plans for chapels, &c. were to be presented at a future vestry meeting.

Guildford.—The cemetery for the town of Guildford was consecrated by the Bishop of Winchester on the 29th ult. The ground contains 4 acres, one third of which is appropriated for the use of the Nonconformists. The chapels are built in the Early Decorated style, being equal in size: the Episcopal Chapel has a bell turret. Godalming stone is employed for the general walling, with Bath stone dressings, to the chapels, and red brick dressings to the sexton's lodge. The total cost, including purchase of land, was 1,900*l.* The works have been carried out under the superintendence of Mr. Robert Wheeler, by Messrs. J. Moon and Son, builders, Guildford. Mr. W. Smith was sub-contractor.

Fosbury (Dis). — Christ Church, Fosbury (Wilts), recently erected, at the expense of Mr. R. C. L. Bevan, was consecrated on 30th ult. by the Bishop of Salisbury. The church is late Middle Pointed, consisting of a nave, ritual chancel, organ-chamber north of the chancel, with vestry and south-western tower. The distinction between nave and chancel is, that the chancel is elevated on a daïs, that the timbers of the roof are elaborated, and that the windows differ from those of the nave, the seats being stallwise. The windows are glazed throughout with Grisaille glass, in varied floriations from natural productions, being relieved with colour. There is a considerable number of texts about the church, arranged polychromatically. Externally, the church is of flint; the freestone work of Bath. The windows have discharging arches, alternated with a peculiar glazed brick of the locality and stone. The tower has three stages, the lower forming a porch, the interior of which is in constructive colours, of brick, and the tower is surmounted by a beacon turret, terminating the staircase to the respective stages. A parsonage-house, in the same period, is built in connection. Mr. Teulon is the architect, and Messrs. Fassnidge, of Uxbridge, are the contractors who executed the work.

Bradford.—The old parish church of Bradford, says the *Bath Chronicle*, is at length to undergo some kind of reparation, if not of actual restoration, and the work has already been commenced. The chancel gallery has been removed, the chancel arch restored, and that and the altar flooring raised and newly paved: the high, old-fashioned pews have given place to new low oak stalls; and it is in contemplation to increase the accommodation very considerably by re-seating throughout. A stained eastern window is in course of erection, and other alterations and improvements are contemplated.

Curland (Taunton).—The new parish church of Curland, perhaps the smallest church in the county, says the *Taunton Courier*, was opened for Divine service on Tuesday before last. The new building occupies the site of the old one. It has been rebuilt principally at the cost of the Rev. Prebendary Lance, rector of the adjoining parish of Buckland St. Mary. The church is built of flint, with Ham-hill stone for the windows, &c. It is from a design by Mr. Ferrey, carried out by Mr. Davis, of Taunton. The mason's work was under the superintendence of Mr. J. Billing, of Buckland St. Mary: the glazing was by Mr. Gould, of Chard; the painting and diaper work for the reredos by Mr. A. Stansell, of Taunton; and the tablets containing the commandments, in illuminated characters, by Mr. T. D. Ward, of Taunton. The roof is low pitched, and of stained deal, and at the west end is a small open bell turret. The eastern window (a three-light with medallions), is filled with stained glass: the centre piece is the Crucifixion, and the side lights represent the Agnus Dei, and the Pelican feeding her young. The pews are low and plain: about seventy persons, including children, may be accommodated with seats. The church has been constructed of the old materials, together with those of the old chancel of the church of Buckland St. Mary, from which also the west window, together with four out of the five side windows have been given.

Shrewsbury.—Arrangements are being made for the transfer of the contract for the cemetery works to Mr. Treasure, of Newport. The new cemetery buildings, according to the architect, are being proceeded with satisfactorily.

Lilleshall (Shropshire).—The parish church of Lilleshall has been restored and reopened. Mr. Norton was the architect employed. The south wall has been rebuilt, with new buttresses, and windows in harmony with the general design. The small Norman doorway, marking the original limit of the chancel, has been restored and let into the building. The south porch has been rebuilt with a gabled roof in ornamental carving, and the old doorway has been preserved. In the interior the unsightly western galleries have been removed. The three-light window in the south wall of the chancel has been reconstructed and filled with stained glass by Mr. O'Connor, in memory of Lord Frederic Leveson Gower. The subject is the ascending Saviour in the midst of his disciples. Immediately beneath it is a brass memorial tablet, by Mr. Hardman, of Birmingham, with inscription. The chancel is paved with Minton's encaustic tiles, a present from the manufacturer to the vicar. The communion-table, of carved oak, ornamented, is the gift of Mr. Yates, of Shiffnal, the builder. The open sittings in the chancel, as well as those in the body of the church, are of Christiana fir, stained and varnished. The nave arcade has been pierced by a new arch. The oak roof has been freed from paint and whitewash. The doors are constructed of solid oak, with hinges and decorative scrollwork in iron. The lectern of carved oak was presented by the architect. The apparatus for warmth is that patented by Mr. Haden, of Trowbridge. The tenders sent for the necessary works varied from 1,860*l.* to 1,145*l.*; and the whole amount subscribed towards the restoration was 1,044*l.* 5s. 6d. The stained window, which cost 59*l.* was erected by the unaided contributions of the parishioners. The lancet window, depicting the Good Shepherd, and executed in stained glass by Mr. O'Conner, was the gift of Mrs. Ralph, of Hornington Grange, associated with her six sisters, the Misses Iles, of Binbrooke-hill, Lincolnshire. There is still a deficit of 200*l.* The old church accommodated 256 adults, and 120 children: the present provides 530 sittings, 404 free.

Lichfield.—Within these last few weeks workmen have been actively employed in making alterations in Lichfield Cathedral. The principal alteration hitherto effected is the removal of eight walls that filled up eight arches, four on each side of the chancel, at the end nearest the communion-table. The chancel, in consequence, is much lighter: a view of the aisles to the chancel, with the monuments they contain, is also obtained, and the proportions of this part of the structure are brought more fully under the eye. A large window that surmounted the screen separating the nave from the chancel, has also been removed, and it is intended to remove the organ over the screen, which intercepts the view of the roof, from end to end. The walls were erected about fifty years since under the direction of Mr. Wyatt, for warmth; but hot water-pipes are now being laid down. The workmen employed lately discovered, beneath the pavement, a stone coffin, containing a skeleton, the legs of which were covered by a pair of old-fashioned boots: there was no remnant of any other article of apparel, and the boots, except the soles, were much decayed. It is conjectured that the skeleton is that of one of the cavaliers or republicans by whom the cathedral was defended when besieged, during the civil war, by Lord Brooke, or Prince Rupert.

Willenhall.—St. Ann's Episcopal Chapel, just opened, had its origin in a design to raise a school-room, licensed for Divine service. Mr. Henry Jeavons had a strong desire to enlarge the original proposition, by making the structure ecclesiastical in its character and purposes. This gentleman, with subscriptions to no great amount, undertook the whole responsibility of the work, without an architect. The walls are of columnar basalt, obtained from a quarry at Bentley, and the dressings freestone. The edifice is said to be in the Early English style, with porch, nave, chancel, and vestry. Accommodation is provided for 200 worshippers in open sittings, free.

West Derby (Liverpool). — The new parish church of West Derby village has been consecrated. The church is in the Decorated style of fourteenth century, and is cruciform, with a massive tower. Mr. Scott was the architect; Mr. A. Walton acting as his assistant and clerk of works. Mr. Barker, of West Derby, was the builder; and Messrs. Jones and Jump, of Liverpool, executed the joiner's work. The edifice is built of the red sandstone found in the neighbourhood, excepting the interior and ornamental work, which is in white Yorkshire stone. The plan being cruciform, comprises nave, aisles, transepts, north and south chapels, and apsidal chancel. The length of the church is 155 feet, the breadth 60 feet. The tower is 175 feet high. There are seats for 1,200, all plain open benches. The roof is very lofty, and is supported by two rows of pointed arches on massive pillars, slightly ornamented. At each end of the church is an illuminated window. That at the west end is of large size: it has been placed there as a memorial of the late Earl of Sefton, and cost 450*l.*: it was designed and executed by Mr. Wailes, of Newcastle. The leading figures are the four great Prophets, with minor designs, embracing scenes from the Old and New Testaments. The cost of the church is estimated at 12,000*l.* raised by voluntary contributions.

Birkenhead. — The College of St. Aidan, at Claughton Firs, Birkenhead, has been inaugu-

rated by a grand banquet, presided over by the Marquis of Westminster. St. Aidan's College is a theological training-school. The land was purchased from the Birkenhead Commissioners for 9,325*l.* and the building has already had some 12,000*l.* or 14,000*l.* expended upon it. When complete it will form a quadrangle: at present only the principal *façade* and west wing are constructed. The style is the decorated Tudor. The building has three floors above the basement story. There are single residences for seventy-six students in the west wing, besides lavatories, lecture-rooms, and bath-rooms. When the whole of the plan has been completed the college will comprise upwards of 200 residences. The principal lecture-room and dining-hall are at present temporary buildings in rear of the front. To the right of the entrance-hall are the present library and museum of the college. Immediately over the entrance-hall, and occupying the principal portion of the first floor, is the chapel, which will accommodate about 150. The whole of the east end of the front is devoted to the residence of the principal and his family. The architects are Mr. Wyatt, of London, and Mr. Henry Cole, of Birkenhead.

St. Helen's.—A contract has been made by the burial-board with Sir R. Gerard, for land near to Windleshaw Abbey, for a cemetery for the parish, and the board has been authorised to borrow 14,000*l.* to purchase the land and erect the necessary chapels thereon.

Salford.—On Thursday before last the top stone of the spire of the Episcopal Chapel at the Cemetery was set by Mr. J. P. Pritchett, of Darlington, the architect. The spire is 90 feet high, and the spires of the other two chapels will be 80 and 70 feet respectively. The chapels are Episcopal, 36 feet by 20 feet; Protestant, Dissenters, and Roman Catholic, 33 feet by 18 feet each, and will, with the lodge, cost 2,500*l.*

Ennerdale.—The old parish church at Ennerdale, says the *Carlisle Journal*, is to be taken down next year. A new erection in its place will be begun about February, and finished probably about midsummer. The funds are provided by subscription. Mr. C. Eaglesfield is the architect.

Aberlemno (*Brechin*).—The parish church of Aberlemno, says last week's *Montrose Review*, after having undergone extensive repairs and alterations, was opened on Sunday last for public worship. The work is not yet completed. An apparatus for heating it is being erected. The walls have been heightened, Gothic windows inserted, and the roof renewed. The designs and plans were furnished by Mr. Maclaren, of Dundee, architect.

Kildalky (*Meath*).—The consecration of Kildalky Church, county of Meath, took place on 23rd ult. The church has been built by Mr. Sharpe, from the design of Mr. Joseph Welland.

PROVINCIAL NEWS.

Fulbourn.—A glass cylinder, containing one of each of the current coins of the realm, a vellum scroll, with inscription, &c. was lately abstracted from the Cambridgeshire Lunatic Asylum works at Fulbourn, three miles from Cambridge. The stone was laid on the 30th of September, and the thieves, to get possession of the coins, of the value of 2*l.* 1s. 8d. had to remove several layers of bricks, and to lift, by means of leverage, a stone weighing half a ton.

Bristol.—The new West of England Bank, on the Exchange, will be opened, says the local *Times*, for business on the first day of the new year, if not earlier. The paper quoted, in rather a high-flown article on the subject, says, "Marvellous as is its ornamental front, we think the bank interior just as provocative of admiration, with its vestibule or entrance-hall, like a little Temple of the Winds, with circular sides and dome supported on graceful caryatides,—its spacious chambers for directors and its manager's parlour,—apartments fit for financial princes. The wonder of all, however, is the great banking saloon, with its Corinthian pillars and rich roof, as elaborate and gorgeous as moulder and gilder can make it; there being on the ceiling (as some one remarked) a foretaste of the treasures to be stowed away in the cellars. It is a most superb apartment, and, if architectural attraction could reconcile a man to any rate of discount, no customer should ever go away dissatisfied. On the west side of the saloon is a most gorgeous alcove, in which, with rays of a golden glory above his head, the manager sits enthroned, commanding a view of all that is going on in the great banking saloon, while a side door leads him, by a step or two, into that small but awful apartment, destined yet to act like a vapour-bath on many a poor body,—we mean the sweating-room. The subterraneous parts of this pecuniary palace are hardly less interesting than those above. The strength of the underground apartments is very great."

Devonport.—The Keyham tunnel, which is being executed by Mr. Smith, of London, contractor, is now drawing to a close. A passage has been effected between Keyham and the dockyard. The length of the tunnel, says the *Plymouth Times*, is nearly three-quarters of a mile: it passes under Moon-street, Morice Town, continuing its course under the gun-wharf to the dockyard, at a level above the elevation of the highest spring-tides.

Warwick.—The Warwick drainage and waterworks are being proceeded with by Mr. Marriott, the contractor. The tanks in the park and near West-street are finished: pipes are being laid: the filter-beds near Porto-Bello are made, and the engine-house is nearly completed. Foundations have been put in for the water-tower in Market-street.

Stockport.—The corner-stone of the Portwood new bridge over the Goit, leading from Warren-street to Wharf-street, Portwood, has been laid.

Masham.—The inauguration of the Riddell Memorial Mechanics' Institute at Masham took place on Monday before last. The structure is from a design by Messrs. Perkin and Backhouse, of Leeds, architects, and is in the plain Italian style of architecture, presenting three elevations. It consists of a large class-room, fitted up with desks and benches, similar to the National Schools, a reading-room, a library, vestibule and staircase, parlour, kitchen, &c. on the ground floor, and lecture-room 40 feet by 20 feet, and 20 feet high, with ornamental roof and panelled ceiling, a committee-room and ante-room, a room for a museum, &c. on the upper floor. The whole cost has been raised by subscription and bazaar, as a memorial of the late Rev. Thomas Riddell, vicar of the parish.

Dunse.—The new Corn Exchange in New Town-street, Dunse, has been opened. The building has been erected at a cost of 1,100*l.* raised partly by a company of shareholders of 2*l.* 10s. per share, and partly by donations. It has been erected after a design by the late Mr. Cassy, a local architect. The foundation-stone was laid in June, 1855. The exchange is lighted from the roof, which is of stained wood in the interior.

Stow.—A new Town-hall has been erected here, according to the *Border Advertiser*. The ground floor contains, besides kitchen and other conveniences, refreshment-room, and the reading-room and the museum, divided by a sliding partition, and having separate entrances. The hall is 43 feet by 28 feet with open roof of stained wood. It is lighted by four windows, two in each end.

Glasgow.—Messrs. Forgan, Marshall, and Waddell, of this city, have contracted for the Duntreath division of the Loch Katrine Waterworks, at a trifle above 48,500*l.* which, says the local *Gazette*, is below Mr. Bateman's parliamentary estimate. This contract embraces about five miles of country, commencing near the village of Strathblane, and running past the village of Killearn.

Inverness.—The new harbour works at Inverness include the extension of the principal pier 210 feet nearer the town, and the construction of a long embankment from the wooden bridge to the Thornbush Pier. The last of these works has been going on since May 1855, under the superintendence of Mr. Macmillan, who designed the embankment, and Mr. Syme, contractor. The embankment is 1,200 feet long, and from 50 to 150 feet broad. The slope averages about 35 feet in depth, and is formed of masonry, topped with green turf. On the extension of the Old Quay, Mr. Hendry, the contractor, has had a number of men employed all this summer. When completed, the harbour branch of the Inverness and Nairn Railway will be run along the pier. The railway is already within a few yards of the quay.

STAINED GLASS.

Fincham.—Mr. Wilmshurst has just completed and fixed, in the church at Fincham, near Downham, Norfolk, two memorial windows. One represents the Resurrection of our Lord: the other, in memory of John de Fincham (the founder of the church), contains sacred emblems, with inscription and armorial bearings in the tracery, &c. The west window was painted by Mr. Wilmshurst for the same church a short time since, and is filled with figures of the four Evangelists, beneath canopies; various emblems filling the space beneath the figures.

Denton.—A stained glass east window has just been erected in the chancel of Denton church, to the memory of the late Mr. John Lewis Lamotte, brother of the rector. The window consists of three openings, with tracery, and is in the geometrical Decorated style of architecture. In the three principal openings are the figures of St. James, Our Lord, and St. John, on pedestals. Over each figure is a canopy work, the whole being enclosed with a border. Two smaller windows have also been erected north and south of the chancel, representing the Birth and Baptism of Our Lord. These windows are the works of Messrs. C. and A. Gibbs, of London.

Kersal Moor (*Manchester*).—Another painted window has been added to St. Paul's church, Kersal Moor. This church, says the *Manchester Courier*, possesses some of the finest stained glass windows of any ecclesiastical structure in the diocese of Manchester, mostly the gifts of wealthy and benevolent members of the congregation of the rector, the Rev. H. W. McGrath, M.A. The new window is in the south aisle, and is the gift of Mr. John Harding, of Broughton, in memory of his father. It is in the Perpendicular style, and consists of three lights, with trefoil heads, the emblems and tracery being in accordance with the character of the general architecture of the church. The centre light of the window contains the Agnus Dei, and on either side are the emblems of the four evangelists, St. Matthew being typified by an angel bearing a scroll, St. Mark by the lion, St. Luke by the bull, and St. John by the eagle. The borders are composed of oak foliage, and roses, in green, violet, ruby, and blue. The window is the production of Messrs. M. and A. O'Connor, of London.

THE GAS COMPANY OF BUENOS AYRES.

The English newspaper, *British Packet*, published at Buenos Ayres 27th September, 1856, contains a lengthy report from the directors of the Buenos Ayres Gas Company, from which we learn that since May 23rd, 1856, a plentiful supply of excellent gas has been furnished for public use. The average consumption during the month of September, 1856, has been at the rate of 30,000 cubic feet per day: the present gas-making apparatus is sufficient to produce 100,000 cubic feet per day.

In June, 1855, the company's engineer, Mr. Wm. Bragge, concluded the contract with Messrs. Edw. T. Bellhouse and Co. of Manchester, for the buildings, engineer's work, main-laying, and completion of the whole for the sum of 46,955*l.* On the 25th of March, 1856, the city was first publicly lighted with gas; and in the beginning of July the company possessed a complete manufactory, capable of producing and distributing above thirty million cubic feet of gas per annum, with nearly thirty miles of main piping, varying in bore from 12 inches to 3 inches.

The report of the directive commission says,—

"The contract entered into with Messrs. E. T. Bellhouse and Co. for the erection of the works, has been now completed with very trifling exceptions; and it is an act of justice towards the contractors to record here the due fulfilment of their contract, both as regards the prompt execution of the works and the quality of the materials employed. It is due to their liberality, and the indefatigable activity of our engi-

neer, Mr. William Bragge, appointed superintendent of the works, by mutual consent, that the distribution of gas for public and private consumption was commenced on the 25th of May, and has since continued with uninterrupted regularity."

The gas-making apparatus consists of the following:—Fifty D-shaped retorts, about 8 feet long each, set in beds of five retorts each, the flues descending to an underground main flue; the hydraulic main, 15 inches diameter, with ascension and dip pipes; complete scrubbers and condensers, set perpendicularly; four circular dry lime purifiers, 8 feet diameter, each having five shelves for lime, with a central change valve box, surmounted by a crane swinging round on the centre, so as to lift any of the purifier covers; a large station meter and governor, two single-lift gas-holders, 60 feet diameter and 18 feet deep, on the self-balancing principle; with the necessary valves, connection pipes, &c. The buildings in the establishment are strong and well designed for their purpose, built of the native brick (13 inches by 6 inches by 1½ inch), set in lime mortar. The gasholder tanks are of similar brickwork, but set in cement. The octagonal chimney is built of bricks made in the country, of the English size, 9 inches by 4½ inches by 3 inches. There is an 8-horse steam-engine for pumping, and for turning, boring, grinding, &c. in the workshop; and a complete ironfoundry, with its independent engine, for blowing the cupola, where lamp-posts, brackets, pipes, and fittings, are being cast for the use of the company. Dwellings for the manager, and for the workpeople employed on the works, are being erected.

HOW TO MAKE A FIRE IN A COMMON GRATE WHICH SHALL SAVE HALF THE COAL AND BURN THE SMOKE.

Under the heading as above the *Builder* published, on the 2nd of February in this year, certain rules for arranging the materials in a common fire-grate to accomplish the promise of the heading. As the instructions given have been followed by many, and as the results are reported to be successful (a glow of triumph), it may not be out of place at this time to re-publish the new method of fire-making, with "additions and emendations."

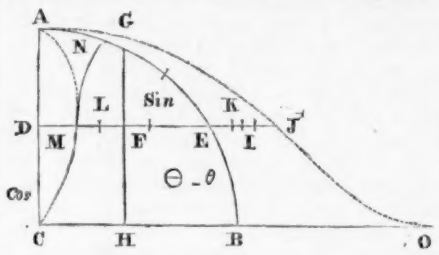
Clean out your grate: cover the bottom with a plate of sheet iron, cut to fit: place your coals in the grate to the level of the underside of the top bar, keeping the larger ones to the front, to prevent waste. Light your fire on the top by means of paper, wood, and coke (the cinders of a previous fire), or any prepared fire-lighting material, and allow it to burn downwards undisturbed. Never poke from beneath; but, if the fire is dull, gently disturb and draw together the upper portion of coal and cinders, allowing the fire to burn gradually downwards.

By this method a pleasant fire is obtained sooner than by lighting from beneath; the smoke is burned; there is neither dirt nor dust underneath the grate, and a warmer fire is obtained with about half the quantity of coals. The plate of sheet-iron is an improvement: but this a correspondent, "E. R." pointed out (p. 150, No. 684). If all the house fires in the metropolis were made and burned on the improved plan, there would be no visible smoke: and think of the saving, by consuming half the weight of coals now used!

There is an old proverb in the West of England, which must now reverse its point. When anything was about to be done stupidly or wrongly, the party concerned was said "to be as bad as the Irishman, who, in laying a fire, put the coals in first, and wood on the top." It has been said the plan is Irish, fires having been lighted from the top in "Old Ireland" "time out of mind." If this is so, Paddy has been right for once. Robert Rawlinson.

Colour in Slating.—A good effect is often the result of accident: being short of green slate, and not wishing to use that horribly cold blue, I intermixed the red Bangor in stripes, allowing the green slate to predominate: the effect is *very* good. The *light* colour should always begin and be deeper, the *dark* end the roof. The course ran 5 green, 3 red; 4 green, 3 red; 4 green, and 3 red.—Somerset.

THE TRISECTRIX AND THE CUBITRIX, TWO NEW MECHANICAL CURVES.



Describe a quadrant A B C. Draw the sine D E; bisect D E in F. Draw the sine G F H.

Make F I = chord E G, E J = 2 E I, E K = ⅓ E J, D L = ⅓ D E, L M = E K, and the chord E N = E M.

Then the point N trisects the arc A E, and M is a point in the trisectrix A M C.

Make the arc A E = three times arc A N, E M = chord E N, D L = ⅓ D E, E K = L M, and E J = 3 times E K.

Then E J is as the cube of E M. and J is a point in the cubitrix A J O.

$$M E = 2\ (\sin.\ \tfrac{1}{3}\theta),\quad E J = (2\ (\sin.\ \tfrac{1}{3}\theta))^3.$$

By the construction—

(1.) $\sin.\ \frac{1}{3}\theta = \frac{1}{3}\sin. + \frac{1}{3}(((1-\frac{1}{4}\sin.^2)^{\frac{1}{2}} - \cos.)^2 + \frac{1}{4}\sin.^2)^{\frac{1}{2}} - \frac{1}{2}\sin.).$

(2.) $\cos.\ \frac{1}{3}\theta = (1-(\sin.\ \frac{1}{3}\theta)^2)^{\frac{1}{2}}.$

By differentiating (1)—

(3.) $$\cos.\ \tfrac{1}{3}\theta = \cos. + \frac{\left(\frac{-\frac{1}{4}\sin.\cos.}{(1-\frac{1}{4}\sin.^2)^{\frac{1}{2}}} + \sin.\right)((1-\frac{1}{4}\sin.^2)^{\frac{1}{2}}-\cos.) + \frac{1}{4}\sin.\cos.}{((1-\frac{1}{4}\sin.^2)^{\frac{1}{2}}-\cos.)^2 + \frac{1}{4}\sin.^2)^{\frac{1}{2}}}.$$

$-\frac{1}{2}\cos.$

By putting into these three forms the extreme values of sine and cosine, viz.—sine = 1, cosine = 0, and sine = 0, cosine = 1, it is seen that (2) and (3) are identical, and consequently that (1) is true; otherwise we must suppose that the general formula of differentiation $\frac{dy}{dx} = \frac{df(x)}{dx}$ may be true for the extreme values of x and y, and untrue for the intermediate ones, which is absurd.

The construction was suggested by an approximation published in the *Mechanics' Magazine*. vol. lxiii. p. 564, col. 2. J. P. W.

THE ANCIENT BELL-STEEPLE OF WORCESTER CATHEDRAL.

At the anniversary meeting of the Worcester Diocesan Architectural Society, recently held, Sir T. Winnington read the following paper on the Clochium or Ancient Bell-Steeple of Worcester Cathedral:—

The object of this association has hitherto been to illustrate the architectural remains of edifices that either wholly or partially exist at the present time, to describe them in detail, and reconstruct, as far as conjecture or analogy will permit us, the original design and intention of their founders. I now propose very briefly to call your attention to a building, of which no trace (as far as I am aware) is now existing, but which has been rendered familiar to local antiquaries by the ancient documents that describe it in the fullest detail, and the drawings it is our good fortune to possess of its form and structure. I allude to the clochium or leaden steeple of the Worcester Cathedral, and will for that purpose make use of the elaborate description contained in the "Observations on Worcestershire, by Mr. Nathaniel Tomkins," a manuscript in my possession:—"The leaden spire, anciently called ye Clochium, was the belfry until the year 1374, when the tower of the church was finished. It consisted of an eight-sided base of stonework, of height even with the embattlements of the church, viz. 60 feet. It was placed so near the church that there was only space between for processions. The diameter of the base of stone was 60 feet; the thickness of the walls 10 feet; the spire of lead above the base of stone in height to the weathercock 50 yards, and the entire height with the stonework and spire 70 yards from St. Michael's churchyard. The weathercock was on a level with the neat spire of St. Andrew's Church, in Worcester; but St. Andrew's Church standing upon a little lower ground, its weathercock is from the ground 77 yards, or 231 feet. That which most amazed beholders was the excellency (in this spire) of the contignation of such massive timber, all of which being Irish and unsawed, polished only with the axe, not having one sawed side. 'It was the design,' says the enthusiastic writer, 'of no ordinary Vitruvius: for all dimensions the like is not perhaps in Europe.' The bells were but five, as we perceive by the frame and stocks whereon they hanged, which were left in the place when the bells were gone. They were of equal weight and tone with those at York, viz. 6,600 lbs. the biggest, and unison with an open pipe of 25 inches long, but in the apprehension of some men the double thereof, the greatness of the sound deceiving their judgment in the tune." Mr. Tomkins then proceeds to compare the bells with some that at that period existed in the Palace Yard at Westminster, as well as others in the cathedral churches of Exeter and Lincoln, and makes use of mechanical terms relating to their sound and quality, which, as I do not profess myself competent to explain their meaning, I have purposely omitted. It would, indeed, require a scientific lecture on music fully to comprehend this portion of the manuscript. Mr. Tomkins then goes on to describe the great gatehouse, the lavatory, dormitory, with many other portions of the cathedral and its precincts. From the description I have just quoted it will appear that the clock, or rather bell steeple, was a building of no ordinary importance, both in structure and elevation, the latter exceeding the central tower of the cathedral (from the description, though it hardly appears to do so in the drawings), and rivalling the spire of St. Andrew's; I mean the ancient spire, measuring 231 feet, now replaced by its elegant and taper successor, which exceeds it in height by about 15 feet, but probably far beneath it in architectural beauty. We have reason to believe that this bell steeple was erected by St. Wulstan, who, while prior of the church, before his episcopacy, between A.D. 1052 and 1062, built a tower for the bells, probably the base on which the spire was raised. It survived the removal of the bells, or possibly a portion of them only 273 years; for we learn that in the year 1647 the leaden steeple adjoining St. Michael's Church was pulled down, and the materials sold for 61*l.* 4s. 2d.; the principal part of which was given to repair several churches in the county, damaged in the civil wars. Dodderhill had 80*l.* Castlemorton, 80*l.* and the rest in proportion. In a pen-and-ink drawing of the cathedral, executed somewhere about 1670, in the Dineley MSS. the basement of this tower is represented, in only one story, much less elevated than the battlements of the church as heretofore described, probably the remnant of the destruction in 1647. Fuller, in his "History of Abbeys," has given a rhyming translation of the Latin inscriptions on the bells in this steeple, which is quoted in Green's "History of Worcestershire." The detached belfry, though not a general, has been far from an unusual feature in the ancient cathedral and conventual churches of this realm: the towers of the original Norman churches being for the most part low, and of lantern construction, rendered some other contrivance necessary for the bells. At Chester, parallel with the west front, and a short distance to the north, stands a massive square tower, 120 feet in height, the upper story octagonal, flanked with small turrets. At Salisbury formerly stood a tower, multangular in form, surmounted like that in Worcester by a leaden spire, with walls and buttresses similar to the Chapter-house and cloisters, and a single pillar of Purbeck marble in the centre, supporting the bells and spire with its leaden covering. Abbot Lichfield's tower, at Evesham, built in the latest period of Pointed architecture, stands in a line with the north transept of the destroyed Abbey Church. There is a tradition also of one adjoining Tewkesbury Abbey: other instances probably exist; nor is the detached steeple uncommon in parochial churches: we have numerous examples in England, particularly in the eastern counties, and not unfrequently, but in a ruder form, in the county of Hereford. The round towers of Ireland, with their much disputed origin and

antiquity, invariably attached to religious edifices or their remains, claim some analogy with this subject. Nor must we forget the campanile of the Lombard churches in Italy, with their fine proportion and exquisite details of brick and marble, so well known to all admirers of ecclesiastical architecture, which, too, form some contrast to the single and rude edifices of northern Christianity, one of which we have attempted to describe in this paper.

DOVER.

The extensive works at the Castle, contracted for by Mr. Diggle last year, in repairing old and building new batteries, have just been completed. The excavations for the foundations of the officers' quarters have been finished by Messrs. Lee and Lavers, who have shifted upwards of 100,000 cubic yards of chalk from the inside to the outside of the castle walls. There is an extensive slip of earth and consequent destruction of a retaining wall at the foot of it near this work, and appearances of similar ones around. Mr. Moxon has been declared the successful competitor for the new officers' quarters at about 40,000*l.* some people say, to be erected from the designs of Mr. Salvin, in the mediæval style.

The works going on at the western heights, in raising the barracks, draw to a close: these likewise are being carried out by Mr. Moxon.

The works at the Dover end of the East Kent Railway have been commenced by the sinkage of a shaft for a tunnel under the western heights, which will bring the terminus of the new line right into the middle of the town, and close on the harbour. The Breakwater, a gigantic work, goes on slowly but surely. The sea made fearful havoc in this locality last month, destroying several engine-sheds and part of the up line of the South-Eastern Railway, and doing damage to the sea groins.

TENDERING FOR GLASS.

It is a frequent source of complaint, that glass manufacturers and dealers are often applied to for estimates in language so ambiguous, that no definite foundation can be laid whereon to base their calculations. Architects and builders frame their specifications in this same style, speak of best seconds crown, as if they were thinking of bread, and often specify weights and sizes incompatible with the manufacture. To-day I have to estimate for a large quantity of window glass for a public company. The specification is thus:—"Glass flattened slabs, best thirds, in plates, about 40 inches by 30 inches, ⅛ inch thick." Now, of course, we ask what kind of glass is meant? Why, flattened slabs of course. But flattened slabs are crown, and will not cut a square 40 inches by 30 inches; neither can flattened slabs be made ⅛ inch thick.

Again, presuming flattened sheet is required, what thickness is wanted? Again we have the reply, one-eighth: but if you look on a trade list, which is supplied gratuitously by any respectable glass dealer, no mention is made of one-eighth; but the sheet-glass is distinguished as to thickness, by its weight in ounces, as 15oz. 21oz. 26oz. or 32oz. to the foot super. We now come to the last question—What quality? Why, best thirds, of course—don't you see it written down so? Will you or any one else explain what is meant by *best thirds*? We have best, seconds, thirds, fourths, and horticultural qualities. From these remarks you will see that a plan which is adopted by this company to ensure correctness is, by the ambiguity of the terms employed, calculated to defeat its own object. Suppose I estimate for thirds quality, and my neighbour imagining best thirds means seconds, and estimates so, he, of course, *cæteris paribus*, will lose. Again, if I estimate for 32 oz. as one-eighth, and my neighbour for 26oz. I do not think I should be troubled with a reply to my quotation. In short, if I estimate for twelve and my neighbour for six, no comparison can be fairly and properly instituted. Vitreus.

BAD PLASTER CAST-WORK.

As a remedy against bad plaster work, I beg to suggest a plan which I know to have been adopted by the architect of a princely mansion not far from Buckingham Palace, during the whole of the time it was in progress. On each of his full-size drawings for the plaster ornament was stated "To be thoroughly undercut." After being modelled to his satisfaction, it was got into plaster and sent to him for approval: if satisfied, he sent it as a specimen to his clerk of the works at the building, for him to keep in his possession, in order that the whole of the work, when fixed, should be equal to the specimen he had, which he did not fail to carry into effect all through the work. It is well known that, with most of the builders, quantity is everything, and quality not much thought of. If a man does his work too well he is discharged, perhaps by a foreman who knows but little about what he is talking of, and is only noted for his ignorance and abuse, and prefers having an Irish hawk-boy or labourer to a man who does his work as it ought to be. Surely, if architects were more generally to interfere, such a state of things would not long exist. By so doing, they would be conferring a benefit which it would be impossible to appreciate too highly. If plaster cast-work is done as it ought to be, it will equal, if not excel any other description of ornament.

A Practical Man.

RECENT PATENTS CONNECTED WITH THE BUILDING TRADES.*

Taylor, J.—*An Improvement in Constructing and Facing Walls.* Patent dated from Feb. 14, 1856. No. 383.—The facing material is made into slabs, each with a flange or projecting rib at the back (which is not new). A wall is constructed of brick-work, concrete, and the facing slabs or tiles. In constructing a wall only the brickwork is run up, leaving headers projecting at intervals (on the side to be faced) which support the flanges or ribs of the facing slabs: concrete is poured in to fill up the space between the facing slabs and the brickwork, the concrete resting on the flanges, and aiding in bonding the brickwork with the slabs.

Schwartzkopff, L.—*Improvements in Apparatus for Raising Mud and Soil from the Bottoms of Rivers and other Waters.* Dated Feb. 9, 1856. No. 350.—A centrifugal or rotary pump is fixed on board a vessel, with a steam-engine for working the same. From the pump descends a suction-pipe arranged so as to admit of its lower end being moved to and fro. The lower end is fitted with an instrument which, on being moved with the pipe, stirs the soil at the bottom of the water, and soil together with some water is continually raised by the pump.

Chance, J. T.—*Improvements in Furnaces used for Flattening Glass.* Dated Feb. 1, 1856. No. 283.—In this invention the beds on which the glass is flattened and cooled are placed each on a frame consisting of two parallel bars or rails connected together. These bars or rails rest on and are carried by the upper surfaces of rollers, which move on two parallel fixed rails. The rollers for each bed are kept correctly in position in respect to each other by a frame and axles, and they are kept correctly on the fixed rails on which they move by flanches or grooves to the peripheries of the rollers, or to the rails on which they move.

Howard, J.—*Improved Apparatus for making Moulds for Castings.* Dated Feb. 5, 1856. No. 313. *Claims.*—1. The use of a sliding-rod or mandril, or its equivalent, for carrying up the pattern through the moulding-plate into the mould box or flask, and withdrawing it therefrom when the operation of moulding has been effected. 2. The use of moulding-plates, constructed as described, for sustaining the moulded sand, and allowing of the withdrawal through them of patterns of which the wheel and plough-frame are the type. 3. A general arrangement of apparatus described.

Cowper, C.—*Certain Improvements in Impregnating Wood with Preservative and Colouring Materials, and in Apparatus for that purpose.* (A communication.) Dated Feb. 14, 1856. No. 388.—This invention comprises—1. Completely enclosing the wood in a vessel into which the liquid is introduced, and connecting one end of the piece of wood by means of a plate with the exterior of the vessel, and causing the liquid to be pressed upon with a greater pressure than that to which the aforesaid end of the piece of wood is exposed; by which means the liquid is caused to percolate through the wood, and at the same time to press the end of the piece of wood against the aforesaid plate. 2. Completely enclosing it in a close vessel, and connecting a plate to one end of the piece of wood, as described, and then passing the liquid through the wood in both directions alternately. 3. Certain apparatus for carrying the invention into effect.

Muratori, C.—*Improvements in the Waterproofing of Hangings or Ornamenting Stuffs.* Dated Feb. 11, 1856. No. 352.—This invention consists in coating cloths, &c. for making them waterproof, with a composition which prevents dampness penetrating them, and, being of a drying nature, is adapted to the ornamenting of them by printing, painting, &c. so as to render them applicable to the decoration of apartments. The composition is composed as follows: 100 parts in weight of Palermo white, ground or triturated either with white or drying oil purified, and five parts of litharge.

* From the *Mechanics' Magazine* and other sources.

Bergner, T.—*Embossing Veneers, so as to represent Carvings in Wood.* (A communication.) Dated Feb. 5, 1856. No. 311.—This invention consists in placing veneers between dies, one of which (the matrix) has its surface formed to the desired pattern, and the other (or plate die) having cavities corresponding to the projections of the matrix. One or both dies are moderately heated, and the veneers between them submitted to a considerable pressure. The hollows on the back of the veneer are afterwards filled up with any plastic substance.

Thomas, G. C.—*An Improved Method of Hardening and Tempering Steel.* (A communication.) Dated Feb. 5, 1856. No. 307.—This invention consists in hardening, tempering, and restoring steel, by applying to it, when heated, a finely pulverised compound of chloride of sodium, bichromate of potash, and prussiate of potash. For ordinary purposes the proportions should be 21 parts of the chloride of sodium, 8 of bichromate of potash, and 8 of prussiate of potash.

Notices of Books.

Table of Quarter-Squares of all Integer Numbers up to 100,000. By Samuel Linn Laundy, A.I.A. Layton, 150, Fleet-street. 1856.

This laborious table appears to have been carefully calculated, checked, and printed. The author states that it was entirely calculated in duplicate, the types set up from one of the workings, and the proofs read from the duplicate, and after correction stereotyped and again read by duplicate, the printing being ultimately taken from the corrected stereotypes. The table comprises about 200 pages in imperial octavo, and by it the product of two factors may be found by the aid of addition and subtraction alone for all integer numbers up to 100,000. Its utility to the architect and civil engineer in estimating superficial and cubical quantities, and to the surveyor in the admeasurement of land, we need not advert to. The author is not the first who has computed a Table of Quarter-Squares, but the great extension given to the table in the present volume constitutes a decided advantage, giving it a power ten times greater than Voisin's, and five times greater than Merpaut's, and supplying the means of operating directly upon all factors of five digits.

The Treasury of Geography: designed and commenced by the late Samuel Maunder, and continued and completed by William Hughes, F.R.G.S. London: Longman and Co. 1856.

This new volume, of upwards of 900 pages of close but clear print, forms a most comprehensive and inestimable treasury of geographical information, physical, historical, descriptive, and political, comprising a succinct account of every country in the world. It is preceded by an introductory outline of the history of geography, a familiar inquiry into the varieties of race and language exhibited by different nations, and a view of the relations of geography to astronomy and the physical sciences. The late professor of geography in the College for Civil Engineers, Mr. Hughes, appears to have done the late Mr. Maunder's idea of the work great justice, and he has succeeded in embuing it with that popular and peculiar interest for which his predecessor in such tasks has become so well known. The mass of miscellaneous knowledge and information brought to bear upon such a work, and here condensed in a most readable and entertaining form, must have been immense, and may well have constituted the favourite study for many years of its able continuer and completer, Mr. Hughes. The volume is, besides, well illustrated with maps and engravings.

Miscellanea.

Monument to the late Marquis of Londonderry.—A meeting of the Londonderry Memorial Committee was held on Friday week, in Belfast, to consider the tenders for the execution of the work. It was found that the plan of Mr. Boyd, of Belfast, which received the first prize, and that of Mr. Barr, of Newry, which obtained the second, could not be carried out. The committee adopted the tender of Mr. Lanyon, and entrusted the execution of it to Mr. Hugh Dixon, of Newtownards, who engages to complete it at 2,000*l.* A building committee was then appointed to arrange and superintend the work.

The Norwich Archæological Society.—The quarterly meeting of this society was held on Thursday in last week, at the Guildhall, Norwich. A paper was read by the Rev. J. Gunn, on the derivation of the names of parishes, &c. in Norfolk. Mr. Harrod exhibited a sketch of a discovery of a perforated buttress that had been recently made at the east end of the Dutch Church. The president, Sir John Boileau, introduced the subject of the "Manchester Art Exhibition." If any of the members, he said, knew of any old rood-screens or altar-pieces which were available for the exhibition, they would be doing good service to the effort which was about to be made, by sending information to Mr. Scharfe. Mr. Harrod trusted that no existing rood-screens would be taken to pieces for that purpose, a sentiment in the propriety of which we entirely concur. There must be plenty of detached fragments in the county, he remarked, amply sufficient for the object of the exhibition. The president thought it would be wrong to take down what were up in their proper places, but where they were used for pew-backs, or in similar positions, there could be no harm done.

Cambridge Architectural Society.—The first meeting of the above society for the term was held on Wednesday, October 29th. In the absence of the president, the chair was taken by the Rev. W. M. Campion, of Queen's College. The secretary read a paper on the Church of the Holy Spirit, at Wisby, in Gottland, which he had visited during the long vacation, prefaced by a sketch of the history of the island. The paper was illustrated by a series of lithographs, drawn by a Danish architect. The church is of a peculiar construction, being an octagon, of two stories, with an octagonal aperture in the roof of the lower church, opening to that above. Its date is about 1200 A.D. The Rev. G. Williams, of King's College, then gave a short account of the progress of Church Restoration in Germany, particularly with reference to the Cathedral of Cologne, and the Church of St. Gereon, in the same city.

Kilkenny Archæological Society.—The November meeting of this ever-increasing association was held at Kilkenny on Wednesday in last week, when fifteen new members were elected and various presentations made and communications of interest received or read. Amongst the latter was one on "Ardmore Round Tower, county of Waterford," by Mr. John Windele, of Cork; and others on the Woods and Fastnesses and on the Scandinavians in ancient Leinster, by a member of the society.

Proposed new Foot Bridge over the Thames at Richmond.—The executive committee of the Conservative Land Society have taken measures for the construction of a new foot-bridge across the Thames, as an appendage to the present railway-bridge, and a direct communication between Richmond, Isleworth, and the society's property at St. Margaret's. Mr. George Morgan, the architect and surveyor to the society, has prepared a plan, with access at the Middlesex and Surrey ends by light spiral staircases, without injuring the design of Mr. Pennethorne. The project has received the sanction of the South-Western Railway Company, and of the corporation of London as conservators of the Thames. It now requires the assent of the Woods and Forests, inasmuch as the spiral staircase on the Surrey side would touch the property of the Crown.

In Leicester-square, an example of work in the Early Decorated style, is approaching completion. It forms an extension of Messrs. Seal and Co.'s bank. The front is of Anston stone, with Purbeck marble shafts to the jambs of the openings and the angles. The internal mahogany fitting, and likewise the stone and wood carving, are too highly finished. The architect is Mr. John Billing; the builder, Mr. Thomas, of St. John's-wood.

The Chartered Gas Company.—At the half-yearly meeting of this company, Mr. Benjamin Hawes, governor, in the chair, the report stated that the balance of profit for the half-year was 22,052*l.* 10s. 9d. against 20,419*l.* 14s. 3d. for the corresponding period of last year, enabling the directors to recommend a dividend at the rate of 7*l.* per cent. per annum, free of income-tax. The report was unanimously adopted, and the dividend declared.

"Students of the Academy."—Sir,—Can you inform me, through the medium of your paper, the requirements that are necessary to become a student of the Royal Academy? I have inquired at the Academy, and the porter could not inform me.

An Architectural Pupil.

*** An architectural design and drawing from plaster must be first submitted to the keeper, together with a letter from some person of repute, giving assurance of the moral character of the applicant. If the drawings are approved, the candidate is required to make a design and a freehand drawing of ornament within the walls of the Academy, from which the Council decide on his application for admission.

The Iron Trade.—This trade is by no means in a promising or active state at present. In the South Staffordshire and East Worcestershire districts some ironmasters, who can do so, have resolved to blow out furnaces and reduce their make, and the question of an acknowledged reduction of price has even been under consideration. The trade is equally dull at Liverpool, where Welsh and Staffordshire makers are said to have already conceded reductions ranging down to 20s. per ton in some brands of the latter make of iron. The Scottish pig-iron market is in upward movement, and not so slack.—Mr. Bessemer is already dragged into Chancery with his patent,—not by his best known rival Mr. Martien, but by Mr. Birch, manager of the Bowling Ironworks, who maintains that an invention of his, already patented and in use for eighteen months, is identical with that of Mr. Bessemer. This process, which is thus alleged to have stood the test of eighteen months' practice, is described as the conversion of pig into malleable iron by a single process, so that this grand impracticability must be supposed to have been actually in every-day progress, while clever fellows were proving its impossibility. We know nothing personally, however, of the merits of Mr. Birch's process. The patent of Capt. Uchatius, we hear, has passed into the hands of the Ebbw Vale Iron Company, who must have satisfied themselves of its importance and utility. The Uchatius steel is said to have been found to be an excellent material for rails.—The iron trade in France appears to be growing in importance. Both home production and importations have considerably increased of late.

Inauguration of the Manchester Mechanics' Institute Building.—Lord Palmerston favoured with his presence a meeting of the members and friends of the Manchester Mechanics' Institute on Thursday in last week, for the purpose of inaugurating their new building; and the reception with which he was greeted by the 3,000 or 4,000 persons assembled was of the most enthusiastic and flattering character. Mr. Oliver Heywood, the president of the Mechanics' Institute, occupied the chair; and the Premier was accompanied to the platform by Lady Palmerston, the Earl of Wilton, Sir Benjamin Heywood, the Mayor of Manchester, the Mayor of Salford, Mr. Brotherton, M.P. the Dean of Manchester, and other gentlemen of local influence and position. Lord Palmerston addressed the meeting at some length, in a style suited to the occasion; and took the opportunity of highly complimenting the Institute on the magnificence of their new building. The objects and purposes to which it is to be devoted naturally led his lordship to expatiate at some length on knowledge and instruction. The first object of instruction (he remarked) ought to be that which we have been told is the meaning of education—to teach a man how to live; and, to teach a man how to live, his attention ought first to be directed to that pursuit to which he means to devote himself through life. There, indeed, he should drink deeply, and there he should endeavour to perfect his knowledge; but ought he on that account not endeavour to enlarge his mind, to extend his views, and obtain information on other matters not connected with the business of his profession? But we are told you will make him a mere smatterer in knowledge. Better be a smatterer in knowledge than ignorant and uninstructed. There are many lines of information which it is most essential for a working man to pursue, but from which, were it not for institutions such as this, he would be hopelessly excluded.

Meakin's Domestic Fire-escape.—In Bridge-street, Blackfriars, several experimental trials have been made with a new fire-escape, invented by Mr. Meakin, of Baker-street. The apparatus was fixed to the centre window of the third floor, 40 feet in height. By pulling a handle connected with a continuous wire, an alarm-bell is set in motion, with a powerful ring, sufficient to awaken the inmates and the immediate neighbourhood. The same act frees two coils of strong galvanised wire rope, which, in their descent, uncoil, and disclose two metal handles. These secure communication with the street, when a telescopic basket may be immediately attached and run up to the top windows.

Appropriation of Sewage.—I beg leave, in addition to the suggestion of "O. P" as to the sewage question, to hint that the question,—which is the best way of employing sewage manure, and, in particular, which is preferable, solid or liquid manure, should be referred to some of our leading agriculturists. Can any manure be deodorised without losing a great deal of its agricultural value, and by what process? How far will the commercial value of sewage manure compensate the trouble and expense of carriage to a certain distance beyond the precincts of the town? In what proportion is sewage manure to be distributed in the neighbouring districts; or in other terms, in what districts will it be specially useful? These suggestions have been neglected as yet, I believe.

W. O'Brien.

Corn Exchange, Devizes.—Now that the tenders are opened, and the very unsatisfactory fact forced on the committee, that Mr. Hill's plan cannot be done for his estimate, and some 400*l.* beyond it, we look to you as the defender of those that are shabbily treated, to publicly say a few words on the matter. Why did the committee resolve to adopt Mr. Hill's plan in preference to that by Mr. Phipps, which had met with their approbation, at the first two or three meetings? It is asserted that it was not his former plan, modified or amended, that was produced, but an entire new design, far more elaborate than his first, and having in it several fresh forms of arrangement. Mr. Hill almost guaranteed his design at 1,500*l.* The committee have borrowed money from the corporation already, and now talk of endeavouring to collect 400*l.* more, which seems extremely unfair to all the competitors.—Looker-on.

Institution of Civil Engineers.—On the 11th inst. the session was commenced, Mr. Robert Stephenson, M.P. president, in the chair, by the reading of a paper by Mr. D. K. Clark, "On the Improvement of Railway Locomotive Stock," which had been read in abstract at the last meeting in May before the recess, and had been subsequently printed and circulated amongst the members. The discussion was opened, and it was announced that it would be continued throughout the whole of the next meeting (the 18th).

The Art Treasures Building at Manchester.—Another of the men, Bernard Farley, having died from the late accident by the fall of part of the front of the Art Treasures building on the 31st ult. an inquest was held before Mr. Herford, the borough coroner, to inquire into the circumstances. After hearing the evidence of Mr. Crowther, architect, and that of Mr. Foster, an extensive builder, the jury found a verdict of "Accidental death;" but expressed an opinion that the arch was too light in construction, and that the accident might not have happened if due care had been taken in staying the work while in progress. In the course of the inquiry, Mr. Ashton, a member of the executive committee, who, with Mr. Edmund Potter, another member, was in attendance, said that the evidence just given by the architect agreed on the whole with the conclusion to which the committee had come after an investigation made for their own satisfaction, but he wished to state that, on the ground simply of the limited time allowed for rebuilding the arch, and the state of the weather not admitting of so much brickwork being done over again with certainty, the committee had resolved to pull down the other two arches, and to erect three of iron in their places. This would also meet the views of any one who might suppose that there was possibly an instability about the brickwork, which the executive committee did not believe was the case. He said the resolution to erect the façade of iron and glass had been carried in the committee before Farley's death, and the whole building would now, therefore, be of iron, placing the security of the whole beyond doubt.

Completion of the Tynemouth Sewerage Works.—From a report made by the local Public Health Act committee to the town council of Tynemouth, it appears that "while the extent of the works actually executed considerably exceeds the original estimate, the total cost, 12,500*l.* including materials still on hand, falls short of the estimated cost of the whole works, as stated in Mr. Rawlinson's report to the council, dated October, 1854." The council are therefore, as might be expected, highly satisfied with the result; and, while confirming the report, have voted their cordial thanks to Mr. Rawlinson "for his comprehensive report on the completion of the main sewerage works of the district, and the ability shown by him in his plan and estimate, and also for the attention paid by him and his assistants, Mr. M'Kie and Mr. Lawson, in the execution of the works." The council at the same time voted their "best thanks to Mr. Hugh M'Kie, for the attention and ability shown by him in the discharge of his duties as resident engineer, in superintending and directing the execution of the main sewerage works of the district. Also that a bonus of 100*l.* be given to Messrs. Travis and White in substitution of all amounts claimed by them for extras of their contract for the main sewerage works, and in consideration of their having completed the works within the time contracted for." The report of Mr. Rawlinson was also ordered to be printed.

"Additions, Alterations, and Repairs."—Will you explain to your readers and the public generally, that although notice is not necessary to be given in case of "a necessary repair not affecting the construction" of a building, in the case of a "repair affecting the construction" of any building, such notice is necessary. Many very vague ideas are created by the word repair: in some cases, the rebuilding almost *in toto* is called a repair.

A District Surveyor.